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IT has been long recognised that dilatation and stasis of the upper urinary tract occur frequently in pregnancy, but although much information about the nature of the change has been gained recently through the development of urological methods, its significance and cause are not yet fully understood. One of the earliest workers on the subject was Opitz,[1] who came to the conclusion from the examination of post-mortem material that the condition was due to compression of the ureter, especially the right, between the uterus and the structures at the pelvic brim. The work of Carson [2] and others supports this view. The observation that the dilatation in some cases extends throughout the whole length of the ureter led Stoeckel [3] and others to believe that it was due to a general atony of the urinary tract. Hofbauer [4] found a definite hyperplasia of the wall and sheath of the ureter at its lower end and believes that this constitutes an obstruction to outflow at the bladder, causing the dilatation of the ureter throughout its whole length. More recently by the application of urological methods much interesting work has been done, especially in Germany, on the relationship of this anatomical change to disorders of function. Gremme [5] comparing the views of the various workers comes to the conclusion that there is atony of the upper urinary tract in pregnancy which makes it possible for the ureter, especially the right, to be compressed between the uterus and the psoas muscle, that dilatation of the urinary tract does not necessarily mean the presence of stasis, and that there may be delay in emptying the upper urinary tract without the kidney function being affected.

The problems we are confronted with are, the cause of the primary atony which appears to be the chief factor in the production of the dilatation, what effect these changes which occur in pregnancy have on ureter and kidney function, and what bearing they have on the occurrence of infection, with particular reference to pyelitis of pregnancy. Towards their solution I have attempted an investigation from every aspect, and in this lecture I wish to correlate the results obtained by post-mortem, clinical, and urological examinations.

Post-mortem Examination

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The ureters in 102 women, who have died during pregnancy or within a few days of delivery, have been examined. Eighteen were less than seven months pregnant and are not included in the first analysis.

From Table I. we see that 85 per cent. of these cases show some dilatation of the right urinary tract and 72 per cent. some dilatation of the left. Dilatation, as is generally recognised, is more marked on the right side but, contrary to what has often been stated, is more marked in primigravidæ than in multiparæ. The right ureter shows a one-plus dilatation or more in 69 per cent. of the primigravidæ and in only 25 per cent. of the multiparæ. The same thing is seen on the left side.

In 48 cases the distortion was of the type which I consider to be characteristic of pregnancy. It is asymmetrical. On the right side the ureter is dilated from the pelvic brim upwards and is markedly elongated and kinked. The kinks vary in number and distribution, but the most common site is the junction of the upper and middle thirds. They may be very acute and cause marked narrowing of the lumen. They are sufficiently permanent to remain after removal of the tract from the body, but histologically the trabeculæ keeping the loops in position are seen to be very slender. The dilatation also affects the kidney pelvis and calyces. Below the pelvic brim there is often no dilatation of the ureter or, if present it is seldom marked, so that at this level an abrupt narrowing of the lumen usually occurs. On the left side some dilatation is usually present but it is more uniform throughout the length of the ureter, extending down to the bladder so that there is no abrupt demarcation at the pelvic brim, such as is present on the right side, and the left ureter may actually be more dilated than the right just below the pelvic brim. Occasionally the dilatation of the left urinary tract also is marked, in which case the deformity on the left side resembles that typical of the right side. As a general rule where the dilatation was marked on the right side, it was pronounced also on the left to a less degree, but occasionally, where the right urinary tract was enormously dilated, the left showed only a very slight dilatation. This point is illustrated in Fig. 1.

TABLE I

Dilatation.	Primigravidæ (32).		Multiparæ (52).	
	Right.	Left.	Right.	Left.
None.	2	5	10	18
+ − −	2	7	4	13
+ −	6	7	24	12
+	12	10	7	6
+ +	8	1	5	2
+ + +	1	2	2	1
+ + + +	1	0	0	0
	69 %	40·6 %	25·7 %	17·3 %

Dilatation of + indicates a urinary tract with a total capacity kidney and ureter of 20–30 c.cm.; + + 30–50 c.cm.; + + + 50–70 c.cm., and + + + + over 70 c.cm. One + therefore represents a fairly marked dilatation.

In six cases the dilatation was more marked on the left than on the right.

In the 18 patients who died at or before the sixth month 27 per cent. showed a one-plus dilatation of the right ureter and 11 per cent. a one-plus dilatation of the left. The primigravidæ had greater degrees of dilatation than the multiparæ. Minor degrees of dilatation are not easily assessed by this method.

The cause of death did not appear to bear any relationship to the amount of dilatation present except in cases of toxæmia, where it was consistently very slight. There were 14 multiparæ who died of toxæmia, including eclampsia, albuminuria, and ante-partum

* The Bradshaw lecture delivered before the Royal College of Physicians of London on Nov. 1st.

hæmorrhage. None of these showed a one-plus dilatation, most showing very little at all. For the rest of the multiparæ in this series, the incidence of one-plus dilatation was 40 per cent. This corresponds with the urological finding that there is an absence of delay in excretion in the toxæmic cases. Anselmino, Hoffman, and Kennedy [6] have shown that, in the toxic albuminuria of pregnancy and eclampsia, there is an overproduction of the hormones of the posterior pituitary gland. It is probable that this is the factor which prevents atony of the urinary tract in these cases.

FIG. 1

Urinary tracts in a 5-para, who died undelivered of placenta prævia at term, and in whom the urine was sterile.

MICROSCOPICAL EXAMINATION

The striking microscopical feature in the lower part of the ureter during pregnancy, as was first demonstrated by Hofbauer, is the excessive hypertrophy of the ureteral sheath, which in the non-pregnant state is a very thin structure. The individual muscle bundles are hypertrophied and there is a proliferation of fibrous tissue between them, converting the ureter into a rigid tube. The same changes are also seen in the wall of the ureter. They are found to the most marked degree in the juxtavesical portion but also to a less extent higher up the ureter. Both ureters are affected and primigravidæ as much as multiparæ. The amount of hypertrophy varies greatly in different cases and does not always correspond to the amount of dilatation present. It was absent in the cases who had died in the early months of pregnancy. Transverse sections of dilated ureters at the widest part show little evidence of hypertrophy, the wall being thinned out and the muscle-fibres stretched.

Even where there is marked dilatation of the kidney pelvis and calyces on one side only, no microscopic difference has been detected between the two kidneys, although from tests on the living a similar degree of dilatation appears to have a definite effect on function.

It appears therefore that, in the later months of pregnancy, the right ureter is frequently obstructed at the pelvic brim. A careful examination in women who have died undelivered or in the living before performing Cæsarean section shows that the ureter can be compressed between the uterus and the psoas muscle on the right side. In some cases the compression seems to be between the uterus and the common iliac artery which on the right side, as it has to cross the vertebral column, lies more anteriorly than on the left and pushes the ureter forwards. At Cæsarean section, flexing the thigh to relax the psoas muscle relieves the compression of the ureter to some extent. This may explain the partial relief of pain experienced by some pregnant women on flexing the thigh. On the left side the ureter is less exposed to pressure for several reasons. In the first place, because of the difference in the course of the common iliac vessels on the two sides, it lies more posteriorly on the left and, instead of crossing the vessels almost at right angles as on the right side, it runs almost parallel to them. It is therefore partly protected from pressure at the pelvic brim by the promontory of the sacrum. Secondly, the left ureter at the pelvic brim passes behind the sigmoid colon and its mesentery. The peristalsis of the bowel makes any pressure on the left ureter intermittent and may directly stimulate ureteral peristalsis. I think these anatomical observations explain the difference on the two sides in the second half of pregnancy. Hofbauer is of the opinion that the hyperplasia of the lower ends of the ureters causes the dilatation and, in support of this, he states that pyelograms taken post partum show that the dilatation does not stop short at the pelvic brim but extends down to the bladder. He explains the difference on the two sides as due to the dextrorotation of the uterus during pregnancy, kinking the rigid lower end of the right ureter while the left is merely put on the stretch. I have found at Cæsarean section that the uterus is sometimes twisted to the left and that in these patients the dilatation is not more marked on the left side. Considerable dilatation of the urinary tract may be present between the fourth and fifth months, when the proliferative changes are very slight. It seems more likely that the changes described are in the nature of a protective mechanism to prevent undue compression of the lumen of the ureter by the descending head. Further, in the non-pregnant state ovarian cysts can be shown to cause dilatation of the ureters. Comparing the dilatation in the later months of pregnancy with that produced by an ovarian cyst of the same size and in the same position, we find that it is much less in the latter and accompanied by very little atony. As the cyst is usually situated to one side, it causes dilatation of the ureter on that side. If the cyst is so large as to cause uniform pressure in all directions, the right ureter is always more affected than the left. This is illustrated in Fig. 2, which is an intravenous pyelogram from such a case. The right urinary tract will be seen to be dilated from the pelvic brim upwards but there is complete absence of kinks of the ureter and chromocystoscopy shows very little atony, although there is delay in the appearance of the indigo-carmine. The right ureter is therefore more liable to pressure than the left in both the non-pregnant and pregnant states. This is due, in all probability, to the different course of the two ureters as they cross the pelvic brim and not to the uterus twisting to the right.

Urological Examination

The *methods* employed comprise cystoscopy, chromocystoscopy, pyelography, and separate kidney function tests.

Chromocystoscopy is particularly useful in pregnancy, for generally there is an absence of vigour in the ureteral peristalsis which makes the efflux difficult to see unless stained by dye. Delay in appearance of the dye, which is in good concentration when it does appear, suggests atony of the ureter without dilatation or kidney damage. Poor concentration of the dye suggests either kidney damage or marked dilution of the dye in a dilated urinary tract. If due to kidney damage alone the indigo-carmine excretion time will be within normal limits, but the dye will not reach satisfactory concentration. If due to dilution alone, there will be a steady improvement in the concentration of the indigo-carmine after its first appearance, and there will be a characteristic variability in the

size of the efflux. If dilatation is accompanied by atony, as is common during pregnancy, the ureteral action is much more irregular. There is great variation in the size of the efflux, and long periods of rest are followed by periods of great activity when contractions follow one another at very short intervals; so that there may be great variation in the same case in the indigo-carmine excretion time, depending on whether the dye is given during a period of rest or one of activity.

Intravenous pyelography has great advantages over the older one of retrograde pyelography. Firstly, artificial distortion of the urinary tract and any risk which may be attached to ureteral catheterisation are avoided. Secondly, the time of appearance of the shadow of the renal pelvis gives us valuable information about kidney function and the relative efficiency of the two sides. In the normal non-pregnant state it is difficult to obtain satisfactory shadows of the ureters by this method but during pregnancy the stasis in the ureter is usually sufficient to obviate this difficulty. Intravenous pyeloscopy is unsatisfactory during pregnancy, owing to the thick abdominal wall and to the relatively faint shadow obtained, but by combining the results of chromocystoscopy and pyelography, the various changes in the structure and function of the urinary tract in pregnancy can be deduced. Pyelograms are taken at intervals after the intravenous injection of uroselectan or abrodil.

Kidney function tests.—A complete urea-concentration test on separate kidneys is not possible during pregnancy, because catheters cannot be left in during the whole course of such a test, as if inserted above the pelvic brim the natural state of the urinary tract is interfered with and if below they cannot cope with the intermittent emptying of the dilated tract so that urine escapes past them. Information regarding the kidney's power to concentrate urea has to be obtained from isolated specimens.

An analysis of 100 cases (including normal pregnancies and various complications except infection) examined once during the pregnancy and 66 cases (all normal pregnancies) examined at monthly intervals during pregnancy shows that from the fourth month onwards, especially in primigravidæ, there is a definite delay in excretion, due either to atony alone or to atony accompanied by dilatation. Table II. is an analysis of the 66 cases examined at monthly intervals.

TABLE II

Months pregnant.	Primigravidæ.		Multiparæ.	
	Right.	Left.	Right.	Left.
Over 2 ..	5 mins.	4·3 mins.	4·1 mins.	4·0 mins.
„ 3 ..	4 „	4·6 „	5·4 „	4·5 „
„ 4 ..	8 „	6·0 „	6·8 „	4·2 „
„ 5 ..	11·4+ „	6·0 „	6·7 „	4·3 „
„ 6 ..	11·4+ „	6·5 „	5·7 „	4·5 „
„ 7 ..	10·4+ „	6·3 „	7·0 „	5·0 „
„ 8 ..	7·6+ „	5·0 „	6·7 „	5·0 „

The numbers represent the indigo-carmine time in minutes. + indicates that in several of the cases the dye had not appeared at the end of the observation period.

As already stated, the indigo-carmine excretion time alone may be misleading, so that the actual times shown on the Table must not be taken literally. It will be seen that in primigravidæ the delay in excretion begins at the fourth month, reaches a maximum at the fifth and sixth months, and diminishes towards term. The delay is more marked on the right side. In multiparæ, this Table shows slight delay at the right side but no definite maximum period, and on the left side there is a striking absence of delay in excretion at any stage of pregnancy.

Table III. is an analysis of 37 cases, 16 primigravidæ and 21 multiparæ, selected because of excellent general health and past history, who were examined at monthly intervals during pregnancy. There was some degree of dilatation in 62·5 per cent. of the primigravidæ as compared with 42·8 per cent. of the multiparæ, in whom the dilatation was usually slight. Delay in excretion, like dilatation of the urinary tract, is more frequent and more pronounced in primigravidæ.

TABLE III

Delay.	Primigravidæ.	Multiparæ.
Marked	3	3
Moderate ..	5 (62·5%)	0 (42·8%)
Slight	2	6
None	6	12

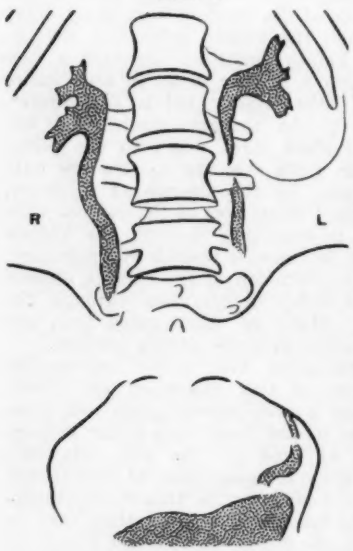
Where the delay in excretion is moderate, a catheter passed into the right ureter after the dye has appeared from the left ureteral orifice will tap the dye as soon as it passes the pelvic brim. Where the delay in excretion is very marked, a catheter passed into the right kidney pelvis will drain urine still unstained by indigo-carmine. If the upper urinary tract is drained by introducing a catheter to a point above the pelvic brim for some minutes before injecting the dye, the excretion time is markedly improved. The site of the obstruction to outflow, which is the cause of the back-pressure on the kidney susbtance, is therefore at the pelvic brim.

As has been pointed out in the examination of post-mortem specimens, the dilatation usually affects, on the right side, the kidney pelvis and calyces as well as the ureter, whereas, on the left side, it is more often confined to the ureter. Intravenous pyelograms show this to be the case in the living. Where there is considerable dilatation of the calyces, there is also delay in appearance of the shadow, indicating delay in excretion through the kidney substance, that is, interference with kidney function. In such a case there is usually also a further delay in appearance of the shadow of the kidney pelvis and ureter, indicating stasis in the urinary tract. The left urinary tract may show right down to the pelvic brim, while on the right side the calyces are only beginning to appear. In the absence of infection, there may be marked dilatation of the calyces with only slight delay in excretion through the kidney substance, whereas, in cases of pyelitis of pregnancy, there may be little dilatation of the calyces present with very marked delay in excretion through the kidney substance. Many of those cases then are probably pyelonephritis and not simply pyelitis.

The urea-concentration test adds information regarding the effect of this dilatation on kidney function. If during a urea-concentration test urine is taken during the second hour from either kidney, the concentration of urea on the left, relatively undilated side, is always higher than on the dilated right side, while one hour later the urea concentration on the left side has fallen and is lower than that on the right side which has increased, although it usually will not reach the maximum attained on the left side. In individual cases the results vary a great deal according to the time at which the specimens are taken and need care in interpretation. The delay in the concentration of urea by the right kidney in pregnancy is demonstrated in the examination of separate kidney specimens in 21 out-patients, in whom, although the indigo-carmine test showed the left kidney to be more efficient than the right, the urea concentration was higher on the right side than on the left in seven cases.

The usual sequence of events in pregnancy is as follows. At the beginning of pregnancy a primary atony of the ureters occurs. In some this is very slight and may be scarcely appreciable. In others it affects both ureters, equally in primigravidæ but in multiparæ it may be more pronounced on one side, usually the right, where presumably there has been a previous dilatation of a marked degree. At the third month the primary atony disappears. At the fourth to the fifth month delay in excretion occurs, usually most marked on the right side. At this stage the delay may be due to atony without dilatation but, more commonly, dilatation of the ureter above the pelvic brim can be demonstrated. The degree of stasis is not in proportion to the amount of dilatation present, as considerable dilatation may be present without any stasis. In some cases spasm of the ureter at the pelvic brim can be demonstrated at this stage, causing severe spasmodic pain over McBurney's point. In such cases there is marked activity of the urinary tract but delay in excretion occurs due to the spasm, and there is dilatation and kinking of the ureter above the site of the spasm. Where dilatation is accompanied by atony, pain is usually absent but, if present, is slight and of a dull aching character. The spasm of the ureter is probably the result of the pressure of the uterus, as it can be produced by an ovarian tumour of the same size. The stasis and dilatation become more pronounced until they reach a maximum usually at the sixth month. From then until term elimination slowly improves. On the left side, where the delay usually has been less marked, this improvement, which may be accompanied by a decrease in the amount of dilatation, is easily seen, but on the right side, when there has been very marked stasis and dilatation, there are technical difficulties in the way of appreciating moderate degrees of improvement. Within a very short time after delivery the ureters again show atony, although the excretion time may be improved. The following cases illustrate the various changes occurring in the urinary tract in pregnancy which have been discussed above.

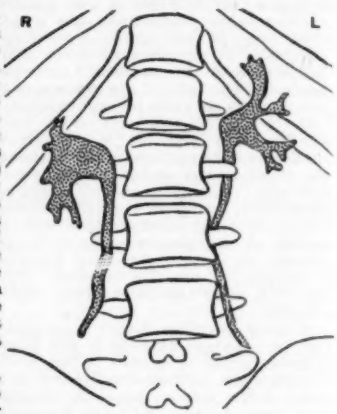
FIG. 3



CASE 1.—Mrs. A., a primigravida. At two and a half months delay in excretion of dye and evidence of atony. Intravenous pyelogram (Fig. 3) shows dilatation of both ureters. At three and a half months less atony and difficulty in obtaining a pyelogram of the ureters due to improved function. At four and a half months more atony again and a similar pyelogram obtained as at two and a half months. At six months developed a right-sided pyelitis, pain only slight. At seven months on left side indigo-carmine excretion time is now normal, although in pyelogram the left ureter is still dilated; right urinary tract more dilated from pelvic brim upwards (see Fig. 4).

CASE 2.—Mrs. B., 2-para. At three and a half months atony of ureters, but very little delay in excretion of dye. At five and a half months marked delay in excretion of dye with irregular action of ureters due to atopy. Intravenous pyelograms, taken at 5 and 20 minutes after injection, are seen in Figs. 5 and 6. Fig. 5 shows both renal tracts apparently normal, whereas Fig. 6 shows them markedly dilated. The second plate was taken just before the ureters emptied. The indigo-carmine excretion tests had previously shown that the quiescent period on each side was about 20 minutes. At term indigo-carmine excretion time at the left side normal, but marked delay at the right. Intravenous pyelogram (Fig. 7) shows the left urinary tract to be much less dilated than it was at five and a half months (Fig. 6), while the right is more dilated, with delay in excretion through the kidney which was not present at five and a half months.

FIG. 5



CASE 3.—Mrs. C., 3-para. At six and a half months indigo-carmine excretion time on both sides was six minutes and the action of the right ureter is regular although, as is seen in Fig. 8, it is markedly dilated and kinked.

CASE 4.—Mrs. D., primigravida. At three and a half months sudden severe pain over appendix region. Fig. 9 shows the intravenous pyelogram taken 50 minutes after injection. There is spasm of the right ureter at the pelvic brim. The ureteral catheter could not be inserted beyond this point. In the previous plate at 30 minutes the uroselectan had not reached the ureter on the right side, while the left ureter showed distinctly on the plate taken at seven minutes.

Infection

Although stasis can occur in the urinary tract in pregnancy without infection, a clinical study shows that there is a close relationship between the time of onset of stasis and the time of onset of infection, the so-called pyelitis of pregnancy. This is well illustrated in Table IV. In primigravidæ the time of onset of infection is remarkably constant, 70 per cent. occurring between the fourth and sixth months of pregnancy, whereas in multiparæ the time of onset is much more variable. As has already been shown, this is also the case for the time of onset of stasis. In 6 of the 8 primigravidæ and 17 of the 30 multiparæ, in whom the symptoms of infection appeared at or before the third month, a history of previous infection was obtained. In these cases the primary atony, described above, was probably responsible for the lighting-up of the previous infection at this early stage of the pregnancy.

As the stasis is more marked in primigravidæ, one would expect the infection to be more severe, and this is found to be the case. In a large series the incidence of premature delivery, either spontaneous or induced, was twice as high in primigravidæ.

TABLE IV

—	Under 3 mths.	3–4 mths.	4–5 mths.	5–6 mths.	6–7 mths.	7+ mths.	No definite time of onset.
			70%				
Primigravidæ	8	1	50	33	9	13	4
Multiparæ ..	30	17	28	34	36	28	23
			31%				

INCIDENCE OF INFECTION

It is difficult to obtain figures to determine the risk of infection of the urinary tract in pregnancy in previously healthy women. Of 135 women who had a catheter specimen of urine examined at monthly intervals during the pregnancy, 96 had sterile urines at the first visit in the second month of pregnancy

TABLE V

—	My series of 1000 cases.	Annual hospital reports.				
	1928–29–30	1926	1927	1928	1929	1930
Pyelitis	15·6	—	—	7·3	7·4	8·4
? Pyelitis	10·1	—	—	—	—	—
Abortion	15·2	17·6	19·1	14·7	20·5	16·7
Albuminuria ..	12·6	20·8	20·4	17·5	17·9	21·0
C.P.	9·6	13·4	11·1	10·0	9·8	12·7
Hyperemesis ..	7·5	6·5	5·7	7·7	8·1	9·2
Cardiac	5·1	6·0	5·9	6·1	5·5	8·4
A.P.H.	4·2	6·2	14·5	14·0	5·9	5·9

The "? pyelitis" group represent those cases in which there was a urinary infection the importance of which was doubtful.

and of these, 14, or 14·5 per cent., developed pus and organisms in the urine at one time or another during the pregnancy, 6 of these had symptoms suggesting pyelitis, 2 cystitis, and the rest, in whom infection was slight and transient, had no symptoms. The relative frequency of pyelitis of pregnancy in the antenatal wards of a maternity hospital can be readily determined and is shown in Table V. The first column represents the incidence of the various complications in 1000 consecutive cases, admitted over a period of three years to the antenatal wards of one unit of the Glasgow Royal Maternity Hospital, representing a third of the total admissions to the antenatal department, so that numerically it corresponds to a single year for the whole hospital. The figures for my series indicate that pyelitis is one of the most frequent complications of pregnancy, reaching the high figure of 15·6 per cent., whereas the official report estimates the incidence at half this figure, and indeed before 1928 it was diagnosed so infrequently as to be classed with the miscellaneous group of complications. The figures for the other complications, except albuminuria, agree fairly closely in the two series and the explanation of the disparity is probably faulty diagnosis. In my series only 63, or 40 per cent., of the pyelitis cases were correctly diagnosed before admission. The various diagnoses were as follows :—

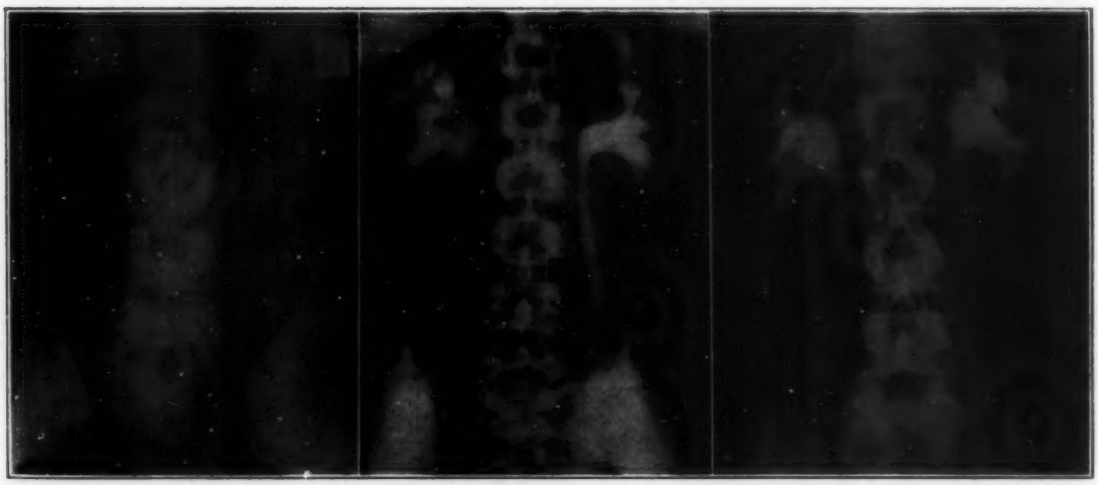
	Cases.		Cases.
Pyelitis	63	Placenta prævia ..	3
Albuminuria	30	Renal calculus	3
Hyperemesis	11	Appendicitis	2
Premature labour ..	8	Influenza	2
Contracted pelvis ..	5	Hydramnios	2
Debility	6	Cystitis	2
Pleurisy	6	Hæmaturia	2
Threatened abortion ..	6	Œdema	1
Cardiac disease ..	4		

CLINICAL FEATURES OF INFECTION

In the absence of urinary symptoms and where the toxæmic symptoms are predominant, the condition is very liable to be wrongly diagnosed as albuminuria or hyperemesis. A microscopical examination of the urine should always be done as a routine measure in the diagnosis of any toxæmia of pregnancy. It is difficult to see why pyelitis should be wrongly diagnosed so often as albuminuria, as the latter is characterised by œdema, rise in blood pressure, and albumin in the urine and no pus, while in pyelitis there is never any œdema or rise of blood pressure (which may, in fact, be lowered), and seldom more than a faint trace of albumin.

Pain and tenderness referable to the urinary tract may be very misleading, as severe infection may be present without either, or both without infection.

FIGS. 2 4 6



Classifying the 156 cases of pyelitis in the 1000 series accurately according to the pain distribution, the incidence of infection on the two sides is found to be right side 76, left side 25, bilateral 36, while 19 were toxic or latent. As a test 30 cases were examined urologically to compare the clinical diagnosis with the urological findings, with the following results. Thirteen were diagnosed clinically as right-sided, but urologically only four were right-sided, the rest being bilateral. Six were clinically left-sided, and urologically all were bilateral. Eleven were

clinically bilateral, and urologically only eight of these were bilateral, the other three having right-sided infection only, pain and tenderness being present on the left side without infection. Clinically, then, the infection is diagnosed as bilateral in only 36 per cent. of cases, whereas actually, as proved by urological examination, it was bilateral in 76 per cent. Pyelograms of infected cases offer a possible explanation of the variable clinical findings.

In a typical attack of acute pyelitis of pregnancy with marked pain and tenderness there is only a moderate degree of dilatation of the ureters and kidney pelves. Kinks of the ureter are found either at the junction of the ureter and kidney pelvis, in which case the ureter may not open into the most dependent part of the kidney pelvis or at the junction of the upper and middle thirds of the ureter. The distribution of the pain corresponds to the situation of the kinks, and the pain is probably due to spasm set up at these points by the partial blockage. As the pain is instantly relieved by passing a catheter to a point immediately above the pelvic brim, the blockage and spasm in the upper part of the ureter must be dependent on obstruction at the pelvic brim. This is illustrated in Fig. 10.

This is an intravenous pyelogram of a 3-para, five and a half months pregnant, suffering from acute pyelitis. Although her severe pain was confined to the right kidney region, the insertion of a catheter to a point just above the pelvic brim caused the pain to disappear almost at once, and leaving the catheter in this position for two days was followed by rapid improvement in the patient's general condition and by an immediate fall in the temperature and pulse-rate.

Besides relieving the pain and acute blockage in the urinary tract in such a case, drainage by a catheter in this position also improves the function of the kidney, as is illustrated by the following experiment.

Mrs. E., 3-para, a case of bilateral pyelitis, had an intravenous pyelogram taken at four months, when a five-minute plate showed no shadow on either side. A 20-minute plate showed gross dilatation of both urinary tracts with delay more marked on the left side (Fig. 11). The X ray examination was repeated, and on this occasion the kidney pelves were drained for two hours by ureteral catheters before injecting the uroselectan. As will be seen in Fig. 12, a dense shadow of the calyces on the right side and a faint shadow on the left side showed in a five-minute plate.

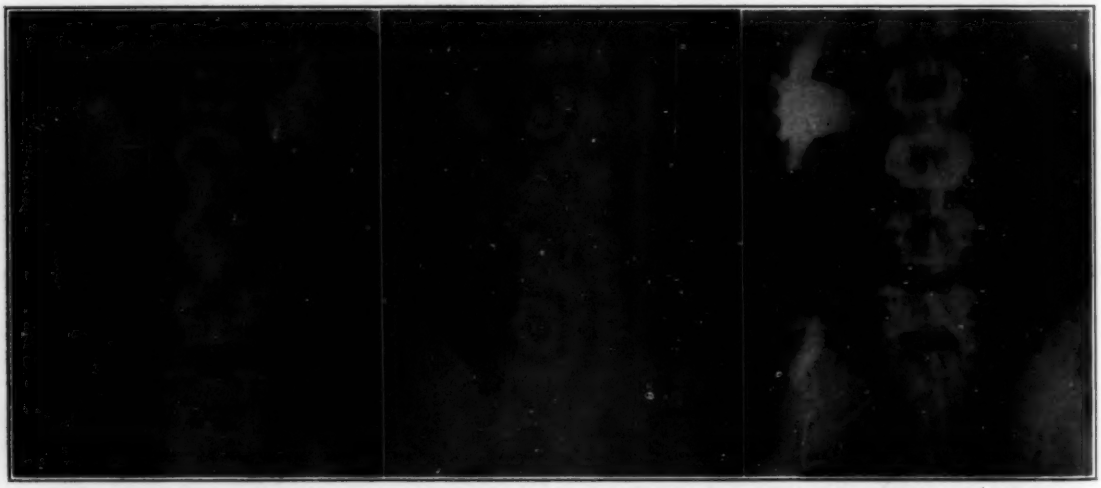
If infection supervenes in a urinary tract which is already markedly dilated, the symptoms are seldom acute, although there may be a remittent fever. The pain is transitory and dull and aching in character. In this type of case lack of drainage due to stasis leads to toxic absorption with symptoms of nausea and vomiting, emaciation, and anæmia. This is the type of case which is often undiagnosed. Fig. 13 is an intravenous pyelogram from such a case.

This is a case of bilateral pyelitis in a multipara, who on admission had no symptoms referable to the urinary tract and showed marked toxæmia. This pyelogram was taken one and a half hours after the injection of uroselectan, as it was only then that a satisfactory picture of the left urinary tract could be obtained. The kidney function on the right side was so poor that no shadow was obtained, even after this long interval.

Where the urinary tract is completely atonic, pain is absent although infection may be so severe that there is almost complete interruption of kidney function. Cases have been encountered where, although the pain and tenderness were present only on the left side, the condition on that side was much less severe than on the right, where solid pus was evacuated from the kidney pelvis.

A careful history usually elicits the fact that earlier in the illness pain and tenderness were present on the right side also. Presumably the pain has disappeared as the tone of the urinary tract has been destroyed, for the pus lodging in the urinary tract aggravates the existing atony and if it is not evacuated by some means or other, the tract quickly becomes quite atonic. Infection can exist where there is very little stasis, as often happens on the left side. The greater degree of stasis on the right side explains why, although the infection is usually bilateral, it is more severe on that side.

FIGS. 7 8 9



The condition is probably a pyelonephritis in those cases where the toxæmia is profound, with sickness, jaundice, and prostration the prominent features, as at post-mortem examination abscesses have been found in the kidney substance of patients who had a history of this type. How far the kidney substance is involved in the less severe cases is difficult to say, but there is certainly marked interference with kidney function. Where the infection is confined to the right side, the concentration of urea on that side is always

very much lower than on the non-infected side, but a total bladder urea-concentration test is within normal limits. In 19 cases with moderately severe bilateral infection, a MacLean's urea-concentration test was done. The maximum concentration of urea, which was always delayed until at least the third hour, was under 2 per cent. except in one case. These points have a definite bearing on prognosis and treatment.

FIGS. 10 11 12

Treatment

The routine treatment of pyelitis of pregnancy in hospital consists of confining the patient to bed and giving if possible at least five pints of fluid in 24 hours, along with large doses of alkalis, until the urine is alkaline. In most cases under this treatment the acute symptoms subside. Light diet is then allowed and the patient is given urinary antiseptics till the end of pregnancy. Under this treatment however the urine practically never becomes sterile before the end of pregnancy and of 104 cases who were traced to the end of pregnancy out of 156 consecutive cases of pyelitis admitted, 34, or 32·6 per cent., did not go to term. Apart altogether from any consideration of after-results this treatment is only partly successful from the point of view of the pregnancy. Of the 34 patients who did not go to term 3 died (in one cardiac disease was probably the primary cause of death). In 5 cases labour was induced and 11 went into labour spontaneously before the seventh month. Eleven went into labour between the seventh and eighth months and 7 in the last month of pregnancy. It will be seen therefore that there is urgent need of earlier and more efficient treatment. Recently Crabtree and Prather [7] in an experience of treatment of pyelitis extending over ten years have found that raising the fluid intake to a maximum is the most important single factor and, if efficiently carried out, enables the patient to go to term without hospital treatment. The value of this treatment can be demonstrated by withholding fluids, when within a few hours an exacerbation of the symptoms will occur.

Posture plays a part. As already stated, at Cæsarean section operations it has been observed that flexion of the thigh causes relaxation of the psoas muscle, thereby diminishing the pressure on the ureter over the kidney regions and along the course of the ureters. As seen in chromocystoscopy, the massage stimulates the atonic ureters to contract. Elevation of the foot of the bed so that the ureters are acting against gravity has been found to cause an exacerbation of the symptoms where the tone is poor.

In certain cases a high fluid intake is impossible owing to persistent vomiting, brought about either by the very severe pain of an acute attack or by toxæmia in a neglected or inefficiently treated case. In such cases the improvement in the patient's condition can be most speedily brought about by renal lavage. A careful urological examination is made, including chromocystoscopy and catheterisation of the ureters, to arrive at an exact diagnosis and prognosis. (There seems to be little danger in this procedure. In 80 cases of pyelitis where catheters were passed to one or both kidneys only 2 showed any reactionary rise of temperature.) Renal lavage can be carried out at the same time. In seriously ill patients it has been found that a single renal lavage is not sufficient to bring down the temperature and pulse-rate, and in such cases indwelling catheters are much more effective. If the acute symptoms do not subside on the routine treatment of fluids and alkalis within a few days, or in a less acute case, if the pain and sickness persist so that the patient cannot rest or take sufficient fluid, then an indwelling catheter is inserted. If in a more chronic case there is debility, lack of appetite, loss of weight, and low fever an indwelling catheter is used. In an analysis of the results of treatment by indwelling catheter, in 38 cases improvement is assessed as being very marked, when it was so striking as completely to alter both the clinical picture and the prognosis. Twenty-three cases come into this category. Two of these were untraced and the remaining 21 patients were all able to carry on the pregnancy beyond the thirty-sixth week and were delivered of live children. They all made good recoveries. This is very satisfactory as

they are all patients who did not respond to the routine treatment. Eleven cases showed partial improvement. Of these, seven were improving in any case and the process was only accelerated by the drainage. Two were very ill and the improvement was not considered sufficiently dramatic to allow of delay in terminating the pregnancy. Two went into labour within a few hours of the insertion of the catheter. In four cases there was no improvement. In two of these it was probably due to abscess formation in the kidney before treatment was adopted. Both died and in one this was substantiated at post-mortem examination. Permission for post-mortem examination was refused in the other case. Two were definitely worse after catheterisation, but as these were among the first cases to be treated by me by this method, the failure may have been due to faulty technique.

FIG. 13

The two patients who went into labour following catheterisation were both in the last month of pregnancy, at which stage of pregnancy I have found that distension of the renal pelvis sufficient to cause colic is associated with the onset of uterine contractions. Similarly, in acute pyelitis, renal colic may be so severe as to initiate uterine contractions and cause a miscarriage even as early as the sixth month. If the renal colic in such a case is relieved by the passage of a ureteral catheter, the uterine contractions subside.

Termination of the pregnancy, either induced or spontaneous, is followed by a rapid improvement. As the passage of a catheter to a point above the pelvic brim has the same effect, the cause of the improvement in both instances is probably the relief of the compression of the ureter at the pelvic brim. The beneficial effect of the catheter remains after its withdrawal as the relief of tension probably enables the ureter to regain its tone and the increased intake of fluid made possible by the improved general condition of the patient stimulates ureteral peristalsis.

Summary

(1) Pregnant women show varying degrees of atony of the upper urinary tract. In some this is very slight so that no appreciable stasis is produced. In others it is very marked and can be shown to occur at the very beginning of pregnancy. (2) In the second half of pregnancy, dilatation and stasis frequently result and are due to pressure of the uterus on the atonic ureters at the pelvic brim. (3) Dilatation and stasis from the pelvic brim upwards can be produced in the non-pregnant by ovarian cysts. In these the dilatation is less and there is an absence of the marked elongation and kinking of the ureter which is characteristic of pregnancy, even although the pressure exerted by the cyst may be greater than could possibly be exerted by the pregnant uterus. The atony peculiar to pregnancy is therefore the primary factor. (4) In normal pregnancy the tone of the ureters has been shown to improve near term, and in cases of albuminuric toxæmia there is a minimum of atony and stasis. In both instances there is believed to be an excess of posterior pituitary hormone in the blood. The primary factor in the production of the changes in the upper urinary tract in pregnancy is probably, therefore, a disturbance of the endocrines. (5) Infection of the urinary tract is common during pregnancy and is often unrecognised. (6) Infection is always preceded by stasis and seldom clears up completely until the stasis is relieved by termination of the pregnancy. (7) Early diagnosis is most important, as if instituted early, simple treatment by abundant fluids and alkalis is sufficient to enable the patient to go to term. (8) Ureteral catheterisation has a definite place in the treatment of serious cases for the relief of pain and the promotion of drainage.

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THE HIGH CARBOHYDRATE DIET IN THE TREATMENT OF DIABETES MELLITUS

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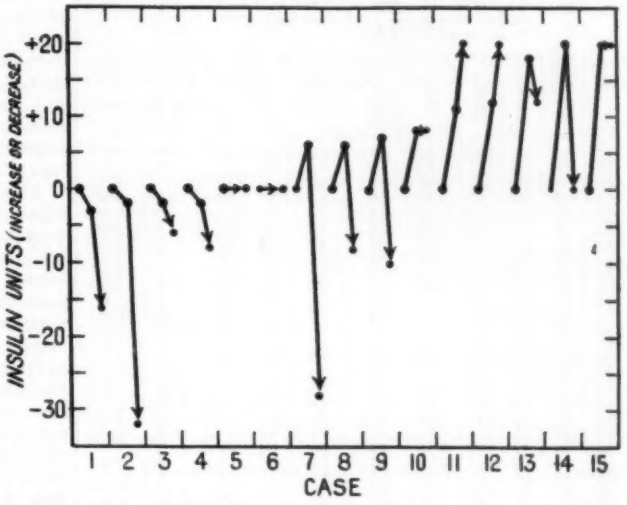
AN important change has taken place in the last few years in the dietetic treatment of diabetes mellitus. Before the discovery of insulin the diet for a severe case was an extremely restricted one. The carbohydrate ration was very small (30–50 g.); the protein ration was about the same as at present (70 g.); the fat ration was often very large (150–200 g.). Even larger amounts of fat (200–250 g.), with small amounts of protein (20–50 g.) and of carbohydrate (30–40 g.), were advocated by Petren,[1] and Newburgh and Marsh.[2] The diet used by one of us (G. G.)[3] was approximately C. 42 g., P. 65 g., F. 123 g., Cals. 1581.

In 1923, when insulin was still very expensive—25*s.* for 100 units—the diet was at first little altered. The insulin improved the health of the patients to such an extent that there was a tendency to maintain the diet at the same level, even after the cost of insulin had been much reduced. Some workers began to increase the carbohydrate slightly, and in 1926 Sansum, Blatherwick, and Bowden,[5] and in 1929 Geyelin and Mackie,[4] published papers showing that much better results could be obtained if the carbohydrate was very considerably increased and the fat decreased. In 1930 Rabinowitch[6,7] advocated

a diet which contained C. 250 g., P. 70 g., F. 50 g., Cals. 1577. Adlersberg [8] has used a similar diet, but he sometimes gave a high protein ration in addition.

In this country, at a meeting of the Royal Society of Medicine (Section of Therapeutics and Pharmacology) in 1931,[9] Poulton, Hunt, Lawrence, Nixon, Thompson, Graham, Cammidge, and Weiss all agreed that patients did better with an increased carbohydrate ration, and Nixon, Graham, and Cammidge laid stress on the importance of reducing the amount of fat in the diet. Recently Nixon [10] and Dyke [11] have published papers on the same subject. Very different diets are being used, apparently with excellent results, the only common factor being the high carbohydrate.

At the meeting referred to above, one of us (G. G.) gave the results of observation on 15 "pedigree" patients, who had all been in St. Bartholomew's Hospital before the end of 1924. They had, with one exception, attended the "follow-up" department regularly monthly or three-monthly, and had adhered fairly closely to the authorised diet of about C. 40–50 g., P. 70 g., F. 125–150 g., Cals. 1613–1846. They were examined again before December, 1929; during the six years since their discharge from hospital they had kept well and were earning their living, although a definite increase in the insulin requirements had occurred. In January, 1930, the amount of fat was reduced to about 100 g. and the carbohydrate was gradually increased by 10 or 15 g. to 100 g., the protein being left unchanged at about 70 g. The insulin dosage was at first increased in the proportion of 1 unit of insulin to 2 g. of carbohydrate, but as definite signs of overdose often occurred the later increases were made in the proportion of 1 unit to 4 g. of carbohydrate. A year after the increase in the carbohydrate was begun, four out of the 15 patients needed 2 or 3 units less, in spite of the increase of 40 to 60 g. in the carbohydrate ration; two required the same amount of insulin; four required 6 or 8 more units; two required 11 and 12, while three required 18 and 20 more units. During the year 1931 the carbohydrate was increased by a further 10 to 40 g., except in three cases where it was kept unchanged. At the end of 1931 all the four patients who had reduced their insulin in the first year had made further decreases in the insulin; and three others were also taking less insulin than in 1929. The actual decreases varied from 6 to 32 units (Table I., see Figure). The two patients who had not altered their dose in 1930 were still taking the same amount of insulin, although the carbohydrate had been increased by 10 and 15 g. One patient, a boy of 19, had reduced his insulin by 20 units, and was therefore taking the same amount of insulin as in 1929, although the carbohydrate consumed was 84 g. more; two other patients had made no change, and two patients had increased their insulin by 8 and 9 units respectively. The results were so striking that another 40 patients, whose diets are fairly accurately known, have been examined. The carbohydrate had been increased by 46 to 99 g., and varied between 100 and 145 g. This batch of patients has now been under observation between eight and 28 months; 14 take less insulin than before the increase of carbohydrate; two take the same amount of insulin; seven take 2 to 8 more units; ten take 10 to 19 more units; and seven take 20 to 30 more units (Table II.). Many of these patients seem to be still improving.



This Figure indicates the change in the number of units of insulin needed for each of the cases mentioned in Table I. in December, 1930 and 1931, showing the increase or decrease following initiation of a higher carbohydrate diet in December, 1929.

TABLE I

Case.	Age in 1923.	Carbohydrate in grammes. December.			Units of insulin.					Increase or decrease in insulin dosage between December, 1929 and—	
		1929	1930	1931	1927	1928	1929	1930	1931	Jan., 1931.	Jan., 1932.
1	31	43	100	113	44	42	38	35	22	− 3	−16
2	36	43	100	100	68	60	82	80	50	− 2	−32
3	34	50	80	100	12	20	40	38	34	− 2	− 6
4	59	50	93	108	33	28	16	14	8	− 2	− 8
5	54	41	100	110	46	42	42	42	42	+ 0	+ 0
6	62	36	78	93	28	28	30	30	30	+ 0	+ 0
7	32	40	100	125	—	—	76	82	48	+ 6	−28
8	43	36	70	100	13	13	14	20	6	+ 6	− 8
9	28	45	100	120	40	28	40	47	30	+ 7	−10
10	47	40	75	100	24	24	22	30	30	+ 8	+ 8
11	39	45	100	100	20	28	32	43	52	+11	+20
12	27	50	80	130	20	0	12	24	32	+12	+20
13	29	36	100	100	36	42	60	78	72	+18	+12
14	14	46	100	130	42	50	60	80	60	+20	+ 0
15	17	40	80	120	36	36	44	64	64	+20	+20

An attempt was made in this series to discover whether the severe or the mild cases improved most. The severity of the disease was measured by the C/I ratio, described by one of us (H. E. W. R.).[12] The total amount of carbohydrate in the diet, together with 60 per cent. of the protein and 10 per cent. of the fat was added together, and the sum divided by the units of insulin—e.g., a diet consisting of C. 100, P. 70, F. 100 has a total carbohydrate value of 100+42+10=152. If the insulin dosage was 50 units, the C/I ratio would be 152/50=3·04.

One defect of this method is the difficulty of ascertaining in out-patients whether the dose of insulin is adequate. If the insulin dosage is inadequate to keep the urine sugar-free, the C/I ratio will convey the impression that the diabetic condition is less severe than it actually is. The blood-sugar in our cases is estimated every 4 to 12 weeks, between the hours of 10.30 and 12 noon, after the usual breakfast and insulin. The dose of insulin is assumed

to be adequate if the blood-sugar is below 130 mg. per cent. at this time of the day. No case has been included which did not fulfil these conditions. If the C/I ratio is below 2, the diabetic condition is

TABLE II

Case.	Age at onset of illness.	Grammes of carbohydrate in diet.			Time in months since change of diet.	Units of insulin required with			Increase or decrease since change of diet.	C/I ratio.
		Low.	High.	Inc.		Low carb. diet.	High carb. diet.			
							M.	P.		
16	30	40	130	+90	12	70	76	48	−22	1·4
17	22	40	125	+85	12	74	88	52	−22	1·4
18	2	40	135	+95	28	30	50	16	−14	3·0
19	8	40	100	+60	12	64	72	50	−14	2·6
20	50	45	100	+55	12	10	10	0	−10	10·0
21	6	67	120	+53	22	45	56	36	− 9	4·0
22	43	47	120	+73	20	40	44	32	− 8	3·5
23	33	45	135	+80	28	80	82	74	− 6	1·2
24	40	40	112	+72	28	54	74	48	− 6	1·8
25	47	40	100	+60	24	22	28	16	− 6	5·0
26	21	35	100	+65	16	84	98	80	− 4	1·5
27	38	45	120	+75	15	10	14	8	− 2	10·0
28	49	45	100	+55	26	16	24	14	− 2	7·0
29	39	44	100	+56	20	34	42	32	− 2	3·0
30	59	45	100	+55	26	60	66	60	+ 0	1·7
31	43	45	100	+55	22	40	50	40	+ 0	2·6
32	35	45	100	+55	13	40	62	42	+ 2	1·6
33	18	40	120	+80	18	70	84	76	+ 6	1·5
34	69	40	100	+60	22	22	34	28	+ 6	4·5
35	46	45	100	+55	24	22	42	28	+ 6	5·0
36	28	47	100	+53	15	36	56	44	+ 8	2·8
37	18	46	145	+99	30	70	86	78	+ 8	1·4
38	50	45	95	+40	15	14	22	22	+ 8	12·0
39	21	48	125	+77	22	30	40	40	+10	8·0
40	26	67	110	+43	20	32	44	44	+12	6·0
41	30	45	100	+55	20	16	36	28	+12	6·0
42	34	54	100	+46	12	40	52	52	+12	2·7
43	54	44	120	+76	12	26	40	40	+14	7·0
44	59	40	100	+60	28	8	22	22	+16	18·0
45	28	45	100	+55	17	75	96	92	+17	1·7
46	42	40	120	+80	18	44	62	62	+18	2·4
47	51	40	120	+80	28	28	58	46	+18	4·0
48	37	50	120	+70	16	13	32	32	+19	7·0
49	18	45	100	+55	8	10	30	30	+20	10·0
50	6	53	130	+77	28	18	48	38	+20	4·0
51	23	55	110	+55	24	24	48	48	+20	4·5
52	55	45	100	+55	18	10	44	30	+20	10·0
53	48	53	130	+77	28	20	42	42	+22	2·7
54	13	50	130	+80	28	40	146	66	+26	2·5
55	53	41	100	+59	28	18	60	50	+32	2·4

Inc. = increase; carb. = carbohydrate; M. = maximum; P. = present.

very severe; 10 of our cases had a ratio between 1·2 and 1·8, and 11 between 2·2 and 3·9.

Table III. shows that while improvement may take place in every group, the more severe cases are a little more likely to show a striking improvement.

TABLE III.—*C/I Ratio*

C/I ratio.	Cases	Insulin.		
		Unchanged or decreased.	Small increase (0–12 units).	Large increase (12–24 units).
Between 10 and 18 ..	6	2	1	3
,, 6 and 9 ..	6	1	1	4
,, 4 and 5·9 ..	7	2	2	3
,, 2 and 3·9 ..	11	5	1	5
,, 1·2 and 1·9 ..	10	5	4	1
Total cases ..	40	15	9	16

DISCUSSION

The explanation of the improvement in the diabetic condition is not easy. Rabinowitch suggested in 1930 that the improvement was due to the decrease in the caloric value of the diet, as a result of the decrease in the fat; but as the outcome of further experiences in 1931 he found that the same improvement might take place, although the caloric value of the diet was kept constant. Adlersberg, who uses different diets, according to the severity of the disease, was also inclined to ascribe the improvement to the lower caloric value. Our experience shows that the improvement cannot be due to a decrease in the caloric value, because it was slightly increased by the substitution of 60 to 80 g. of carbohydrate for 25 g. of fat. It seems more probable that the improvement is due to the alteration in the balance of the carbohydrate and fat. With a low carbohydrate diet, although the breath of the patients did not smell of acetone, the urine usually gave a definite reaction for aceto-acetic acid with Rothera's reagent; under the new régime it never gives any reaction.

This observation suggests that the presence of aceto-acetic acid or beta-oxybutyric acid in the blood may cause the increased demand for insulin, just as, for instance, the presence of a staphylococcal infection causes a great increase in the insulin demands. It is possible that some other intermediate product of metabolism, besides the acetone bodies, may be responsible for the change. This hypothesis is supported by the observations of Bainbridge,[13] on the diets given to the rats and mice used for testing the strength of insulin. She found that a diet containing much fat but no carbohydrate rendered the animals less sensitive to insulin than they were when having a mixed diet. She also thought that a diet of the same caloric value, containing no fat but much carbohydrate, rendered animals slightly more sensitive to insulin.

The fact that an improvement occurs, even though the fat ration is 100 g., is of great importance to the patients who have had diabetes for many years. They have got accustomed to a high fat ration, and when the bacon is reduced to 1 oz. a day, and the butter to 1 oz., they usually feel the privation. To reduce the fat to 50 g. makes the diet almost as intolerable for many patients as is the old diet of 40 g. of carbohydrate. Partly for this reason, and partly because the patients are doing so well, we are loth to recommend, for regular use, a diet of less than 100 g. of fat, but it should be reduced below 100 g. if acetone bodies are present in the urine at any time of the day. Children should be given a lower fat diet, because they form acetone bodies much more easily than adults.

Another possible explanation for the decrease in the insulin dosage is the actual improvement in the beta cells of the islands of Langerhans. So far there is no evidence available on this point.

It is difficult to conduct these experiments, which have to be done without adequate controls, and the search for the most suitable diet must be continued for many years. Some of the 15 "pedigree" patients are still improving, and require less insulin than they did in January, 1932. If in January, 1933, the fat in the diet is reduced by 20 g., and the carbohydrate increased by 45 g., it may be difficult to say whether any subsequent improvement is due to this last alteration in the diet, or would have taken place independently. Another difficulty is the occurrence of secondary infections, which may increase the insulin requirements. These do not seem to have disturbed the 15 "pedigree" patients in the last two years, and their general condition is certainly much better than it used to be.

The task of supervising the change in the diets has been made possible by the assistance of the hospital dietitian, Miss Abrahams, and our thanks are due to Miss Ball, who

has been responsible for arranging for the patients to attend the follow-up department of the hospital.

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SYMPATHETIC CONTROL OF TISSUE CHANGE

AND ITS SURGICAL SIGNIFICANCE

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IT has been proved in many clinics that the ablation of the sympathetic nerve-supply to tissues that show pathological change results in a restoration of cell balance. It is my object to give the salient facts, derived from experimental inquiry, which help towards the elucidation of the nature of the relationship between the sympathetic nerve apparatus and the tissue cell, and to indicate the manner in which surgery acts in the restitution of the tissue change.

It is conceivable that those conditions for which surgery offers a beneficial line of treatment are due to one or other or both of the following disturbances:—

(*a*) Over-stimulation of the vasoconstrictor fibres might produce prolonged vascular spasm, causing impoverishment of the nutrient supply to the tissue cells, which undergo degenerative changes.

(*b*) Stimulation of the sympathetic fibres might directly produce abnormal metabolic changes resulting in pathological sequence.

In 1924 I showed [1] that stimulation of certain mixed nerves results in the variation of the threshold values for pressure pain; later it was found that these changes were independent of the associated vascular response, and moreover they were prolonged by arresting the circulation, showing that the alteration of sensory perception was due to the accumulation of metabolites in the tissues, the direct result of physio-chemical change produced by the nerve stimulus. Then followed the discovery of a comparable alteration in the pressure pain threshold after peri-arterial sympathectomy and ganglionectomy. Moreover, it was found that stimulation of the peri-arterial plexus during novocain block of the surrounding tissues resulted in a similar sensory phase.

The observation of Auguste Tournay [2] on the lowering of the threshold of sensory perception in the hind limb of dogs by sympathectomy, was demonstrated by the return of the nociceptive reflexes after their disappearance following division of the sciatic nerves. These results suggested confirmatory evidence, and, furthermore, it is to be recalled that Claude Bernard noted augmented sensitivity in animals after ganglionectomy. The work of Orbeli [3] has shown that sympathetic stimulation causes an increased oxygen consumption in muscle tissue and delays the onset of fatigue phenomena. He epitomised his conclusions in the statement that the sympathetic system exerts a profound influence over the physio-chemical changes of skeletal muscle and its functional ability. Maibach,[4] in 1928, confirmed the foregoing observations, and found that sympathetic stimulation delayed muscle fatigue in bloodless preparations, eliminating the possibility of the results being due to vasomotor response.

FIRST CONCLUSIONS

The results of the foregoing work may be conveniently stated as follows. Firstly, stimulation of the sympathetic system results in—

(1) Exaltation or depression of the sensory thresholds (for pressure pain in particular).

(*a*) This variable threshold potential is associated with vasomotor change, and it has been found that the diphasic mechanism might play an important part in the adjustment of the animal organism to external stimuli.

(*b*) The threshold changes were shown to be associated with the accumulation of metabolites in the tissue spaces, which prolong the new threshold phase.

(*c*) The threshold changes were shown to be independent of the vascular response.

(2) Increase of the motor response of muscle tissue during the onset of the fatigue phase. The sympathetic exerts a profound influence on the physio-chemical changes in muscle tissue, modifying its functional ability; this change is associated with—

(*a*) Increased consumption of oxygen by the muscle tissue.

(*b*) It is independent of vasomotor control.

In the second place it was shown that ablation of the sympathetic supply results in—

(1) The assumption of the minimum sensory threshold phase and the associated vasodilatation. In this state further electrical stimulation does not appear to produce any change in the new threshold value.

(2) Tournay has demonstrated that sympathectomy exalts the residual somatic sensation in a limb that has been deprived of its principle somatic innervations by division of the sciatic nerve. This hypersensitivity is shown by the return of the nociceptive reflexes.

FURTHER OBSERVATIONS

The next stage in the inquiry was a study of the effects of the irritation or ablation of the sympathetic pathway to a selected area of distribution; for this purpose a series of experiments were carried out in which the sympathetic nerve-supply to the thyroid gland was either severed above the ganglion stellatum or subjected to chronic fibrotic irritation by surrounding the cervical sympathetic chain with slowly cicatrising autogenous muscle grafts. As a result of this work it was found that lesions developed in the thyroid gland and the superior cervical ganglion, those in the gland were initially of the nature of a cell hyperplasia followed secondarily by cell degeneration. In the ganglia there was a proliferation of the connective tissue and degeneration of the ganglion cells. It was observed that although these changes occurred both after nerve section and nerve irritation, they were more advanced in the irritative experiments, where masses of rapidly proliferating thyroid parenchyma entirely obliterated the normal acinic structure. A somewhat similar pathological change was observed to follow electrical stimulation of the cervical sympathetic in goats, as shown by the work of Wilson.[5] The conclusion was that removal of a normal sympathetic central control of the superior cervical ganglion resulted in nerve-cell changes in that ganglion, which in turn removed the restraint on cell growth and permitted hyperplasia, and, furthermore, that in those cases where an irritant element was

superadded there was a more profound degree of cell hyperplasia.

In another series of experiments [6] the sympathetic supply to an area of the arch of the aorta was subjected to chronic irritation and division, and at graded intervals after operation the animals were examined for evidence of pathological change. Allowing for intercurrent arterio-sclerosis, and taking into consideration the control animals, it was proved that a series of pathological changes occurred in the aorta of those animals that were irritated, whereas no results followed simple division of the sympathetic fibres at a distance from their distribution. In those cases where there were positive results the earliest change consisted in the proliferation of the connective tissue cells in the intima, followed by a hyperplasia of the elastic tissue. Here again it is to be strongly emphasised that the first result of sympathetic irritation on the tissue cells is one of increased and irregular growth, and similar to the previous experiments the proliferated tissue underwent a progressive sequence of degenerative changes, followed in the most advanced cases by calcification and the formation of atheromatous abscesses.

From the foregoing group of experiments it was concluded that irritation of the sympathetic supply produced a condition of cell imbalance allowing irregular hyperplasia, and therefore it suggested that the normal control was one of restraint towards cell growth. It is interesting to compare this conception of sympathetic function with the similar type of control which it has been shown is exercised over the sensory threshold, and, furthermore, it will be remembered that the brake phenomenon of Reiger in muscle tissue has been shown to be dependent on the sympathetic innervation.

The next question that arose involved the nature of the elemental disturbances which produced the tissue cell change observed in the foregoing experiments. As the result of a study of the conditions, the following factors give a definite balance in favour of the cell changes being due to direct interference with the metabolism of the tissue cells, relegating the part played by vasospasticity to a secondary position. These considerations are as follows:—

(1) It was found that division of the cervical sympathetic above the stellate ganglion caused cell hyperplasia in the superior pole of the thyroid gland; since the entire vasoconstrictor pathway to this portion of the gland had been severed, it follows that the hyperplastic changes in the thyroid must have been independent of vasopressor reactions.

(2) From a study of the effects of peri-arterial sympathectomy upon dermo-epidermal lesions, it has been proved in many surgical clinics that no inconsiderable percentage of cases are definitely improved or cured as the result of this procedure. It therefore follows that if we are to presume that the success of the operation is dependent upon the removal of a vasoconstrictor element, or conversely, that the ulcers persist on account of vascular spasm, one is faced with the difficulty of an uninterrupted vasoconstrictor supply through the principal mixed nerves of the limb, and it is incredible that the mere proximal interruption of the peri-arterial plexus could nullify the constrictor element if this were the predominative factor. In my experience the thermal effects of a peri-arterial operation are quite insignificant, and yet, despite this poor response, I have found in my own small series of cases there has been a definite progress from the date of operation up to a complete cure. It is interesting to note that Lewis has suggested that in some cases such operations as peri-arterial sympathectomy may produce beneficial results by the effects of trauma, bandaging, &c. In a case of bilateral ulceration on the legs I studied in detail the effect of the periarterial operation, and found that no change whatever occurred in the ulcers before sympathectomy, despite bandaging, dressings, &c., and yet these ulcers progressively healed, although the thermal response was also negligible after the first week.

(3) Polettini and Josué [7] produced intravascular tissue hyperplasia by the fractional dosage of animals with adrenaline over long periods. In a similar series of experiments I found that only one out of four animals developed lesions. This observation serves as a corollary to the experiments where irritation was found to produce aortic change. If adrenaline produced its action through the induction of vasomotor spasm, pathological change might be expected in all these cases.

(4) It will be recalled that the changes in the pressure pain threshold were produced during the stoppage of the circulation, and that the recovery period was considerably protracted owing to the accumulation of metabolites in the tissue spaces. This suggests a comparison with the cutaneous phenomena ascribed by Lewis to the antidromic reflexes through the sensory nerves and their vascular colateral. He concluded that such impulses influenced metabolism in the cells of the skin, releasing in the tissue spaces a vasodilator substance, especially in the epidermis, which is plentifully and intimately supplied by nerve-fibres belonging to the sensory nervous system. It might be added that the skin is equally well supplied with fibres pertaining to the sympathetic system. In this association it is interesting to observe that Lewis has drawn a comparison between histamine and the unknown vasodilator substance in the skin; and, further, the proliferative reactions following the injection of histamine into the muscle coat of the stomach of cats, as studied by O'Shaughnessy,[8] advances this hypothesis. The close chemical affinity between histamine and adrenaline will be recalled in this association; these facts suggest that certain of the hyperplastic reactions may result from stimulation of the tissue cells and the liberation of histamine or an allied substance, exciting hyperplastic conditions.

(5) It is to be noted that the researches of Y. Manouélian (1913) revealed that in many cases where arterio-sclerotic changes had advanced to a profound degree there were still perfectly normal vasa vasorum containing normal blood corpuscles in the wall of the diseased vessel. It would seem reasonable to suppose that if the changes in the main vessel were due to vascular spasm, then the minute nutrient vessels would be first affected, and become obliterated long before the gross changes in the intima of the main vessel. The contrary being the case suggests that the lesions were due to alteration of the cell metabolism through abnormal impulses, descending to the terminals of the vascular innervation.

(6) The researches of Orbeli and his collaborators indicate that in muscle tissue there is a direct physio-chemical control through the autonomic apparatus.

The foregoing deductions show that in these conditions of tissue change, produced experimentally, the essential element that is disturbed is the control of the physio-chemical changes in the actual tissue cell, irrespective of the vasomotor responses. A study of certain clinical conditions was carried out with a view to obtaining similar evidence, and these observations may be briefly stated to present a complete sequence of evidence.

CELL GROWTH AND TISSUE CHANGE

The subject appeared to be intimately associated with the factors controlling cell growth, and suggested as a basis that the stimulus for tissue hyperplasia and its normal inhibition might in some way be partially associated with the autonomic system. The important metabolic changes that are normally affected through the influence of sympathetic nerve stimuli are well recognised, and the intimate coöperation between the autonomic system and the hormonic secretions indicate a mechanism for the direct control of physio-chemical change in the tissues, and it is conceivable that this apparatus once disorganised might lead to the most profound cell imbalance. There are certain clinical conditions associated with the integument which show a progressive sequence of tissue change, and, if left to develop, culminate in the gross hyperplasia of a dysgenetic type of epithelial cell that may invade the connective tissues and produce metastases. These conditions are further characterised by uniform type of primary pathological process, suggesting a definite tissue response to a non-specific stimulus through the same mechanism.

The first two clinical entities that fall into this category are radio-dermatitis and leucoplakic vulvitis; in both cases there is an early stage of vascular dilatation associated with a hyperplasia of fibrous and elastic tissue cells, concurrently there is a proliferation of certain layers of the epithelial cells. In the later stages there are retrogressive changes in the connective tissues resulting in the development of hyaline areas and excessive fibrosis, whilst the epidermal layers undergo desquamation. Lastly, there develops a condition of cell imbalance in which the epithelial cells develop on dysgenetic lines and ultimately may invade the connective tissues at focal points. In both these conditions, surgical intervention upon the sympathetic system has resulted in complete cure or considerable improvement. In a series of 27 cases where the peri-arterial operation had been performed for radio-dermatitis, there were 12 complete cures and 7 considerably improved; these results were obtained from various continental clinics, and, moreover, the peri-arterial operation only was performed. Again, Leriche [9] completely cured a case of leucoplakic vulvitis that had advanced as far as the kraurotic stage by hypogastric sympathectomy.

It was therefore evident that ablation of the sympathetic innervation in either of these conditions causes (*a*) a cessation of the abnormal proliferative activity of epithelial and connective tissue cells; (*b*) an absorption of the excess of abnormal tissue; (*c*) permits the regeneration of normal tissue elements.

It follows that the sympathetic nervous system must be intimately concerned in the production of the earlier stages of these lesions, and that removal of the dyscontrol before the onset of epithelial invasion will restore cell balance. A comparison between these conditions and the sequence of pathological changes that precede the development of coal-tar cancer of the skin and carcinoma of the breast, as described by Sir Lenthal Cheatle, suggests that a similar mechanism is involved in the initial stages. In both these conditions there is early hyperplasia of elastic and fibrous tissues, together with an epithelial proliferation. In this association some very suggestive work has been accomplished by Rémond, Bernardberg, and Sendrail [10]; they found that the production of tar cancer in rabbits was more rapid in its development and precocious in its onset in an area of skin that had been deprived of its sympathetic supply. These results are also comparable to those obtained by Dobrzaniecki [11] and Magliulo, [12] who found that grafts of all types are more successful when applied over areas that have been deprived of their sympathetic innervation. Moreover, the first-named observed that wounds healed more readily after sympathectomy, and he concluded that the regeneration of epithelium, connective tissue, bone, and muscle, is accelerated by extirpation of the sympathetic control.

These facts harmonise with the view that the normal function of the sympathetic system is to act as a brake over cell growth, and that removal of the normal influence or its replacement by irritation produces physio-chemical changes that determine irregular cell hyperplasia. [11] Willy Meyer [13] has suggested that in cases of malignant disease there is a parasympathetic hypertonus which is associated with a definite alkalosis and the predominance of potassium ions. It is known that section of the splanchnic nerves causes a fall in the blood calcium, and therefore a deficiency of calcium ions or an excess of potassium ions would mean a deficiency of the sympathetic nervous influence; in other words, it would imply a loss of normal sympathetic control of the tissue cells. In this connexion it is interesting to observe that Fontaine and Jung, [14] studying the effects of wound healing after the removal of the superior cervical ganglion, have found that healing was more rapid on the sympathectomised side, and that the hydrogen-ion concentration of the exudate was found to vary very slightly from the alkaline to the acid side on the operated side, but that on the unoperated side the reaction was always distinctly acid.

CONCLUSIONS

1. That the sympathetic nerve control of the tissue cells is normally of the nature of a brake, preventing irregular and uneconomic proliferation. In this respect its activity may be compared to its inhibitory influence upon the sensory threshold, and the production of the brake phenomenon in muscle tissue.

2. That certain non-specific irritants act on the autonomic nerve mechanism, associated with the dermis and epidermis, and produce a definite sequence of pathological change characterised primarily by hyperplasia of fibrous elastic and epithelial tissue cells.

3. It is suggested that the derangement of the sympathetic-hormonic apparatus determines the initial development of neoplasms.

4. The surgical removal of the sympathetic nerve-supply acts essentially through extirpation of those factors that disturb the physio-chemical balance of the tissue cells, and that the passive effects of vasodilatation are of a secondary importance.

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ACTUATION OF THE INERT DIAPHRAGM BY A GRAVITY METHOD

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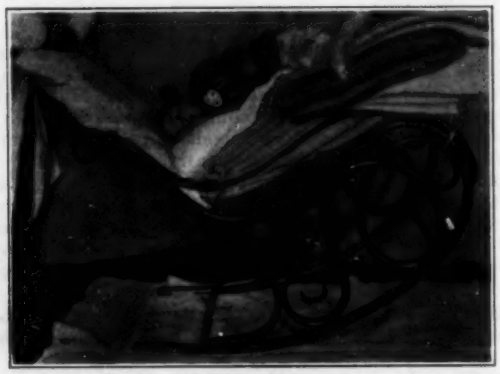
FORMERLY I regarded the breathing thorax as a concertina-bellows; my present work suggests that it resembles rather a cylinder and piston. In older men the cylinder wall is often rigid and is scarcely used in respiration at rest. Hence in artificial respiration it seems much better to exploit the piston action of the diaphragm rather than to try to compress the rigid walls of the cylinder—leaving the piston flapping passively up or down and thus frustrating much of one's efforts to squeeze air in and out of the trachea.

The efficacy of the following method—simple but apparently novel—is illustrated by my first two cases: (1) post-diphtheritic paralysis of the diaphragm (successful); (2) Landry's paralysis, dying of failure of the heart, not of respiration.

Essentially the method consists of laying the patient on a stretcher, which is pivoted about its

middle on a trestle, and rocking up and down rhythmically so that the weight of the viscera pushes the flaccid diaphragm alternately up and down. Anyone can convince himself that this method of artificial respiration is adequate by lying on the apparatus in action. He will find that he need not

FIG. 1



CASE 1.—The child (dressed and convalescent) in the head-down position on the rocking-chair used when the diaphragm was paralysed. The retaining strap for the buttocks is missing.

breathe; it is done for him. Oxygen is not required—only air.

TWO ILLUSTRATIVE CASES

CASE 1.—*Post-diphtheritic diaphragmatic paralysis* in a healthy child aged 2. Faucial diphtheria had developed five weeks earlier and had been treated with 8000 units of serum by Dr. Maurice Jacobs. A month after the onset he had noted nasal speech, nasal regurgitation, and some weakness in the legs and neck. But the general health was good and the child had been out in her pram for a few days. Then suddenly on Jan. 22nd, five weeks from the onset, the child became alarmingly ill. The nearest doctors were hastily summoned and they expected death in a few hours. I was asked to see the child by Dr. Jacobs who was then ill. I found her lying on her back, pale, and apparently drowning in her own gurgling bronchial secretions. The observation that the epigastrium did not rise in inspiration was sufficient, with the history, to give the above diagnosis.

The child was immediately put on her side, on pillows so arranged that the trachea was sloping decidedly downhill. The breathing rapidly became easier and quieter. In a few minutes a quantity of tenacious, frothy mucus could be removed from the mouth, the cheeks became pink, but there was the danger of pneumonia developing. The temperature then was 98° F. and never rose above 100°. Feeding was by egg-spoons of fluid, tipped into the lower cheek. The same lateral tilted position was retained for ten hours. It then occurred to me that, though the position was excellent for drainage, the weight of the abdominal contents would push up the diaphragm and cause some collapse of the lungs which would increase the risk of pneumonia. Further, that if a slow seesaw movement were provided the diaphragm would be pushed up and down by the viscera in imitation of its natural movements. Accordingly a rocking-chair was produced and a level bed made on it with several blankets. A towel pinned from arm to arm of the chair prevented the child slipping when the chair was tilted through 30° on each side of the horizontal. This was done by the parents about ten times a minute continuously for two days, except at meal times when the head-down position was maintained by a block (Fig. 1). The child appreciated the rocking, which conduced to sleep. No râles were heard, except after feeding owing to some pharyngeal paresis. Next day she was demanding biscuits in a nasal voice.

On the third day spontaneous movements of the diaphragm were to be seen in the epigastrium. It was unfortunate that radiography—by Dr. J. E. Bannen with a portable apparatus—had to be deferred to this day, but it shows the desired excursion of the diaphragm in the head-up and head-down positions.

Over-extension of the paralysed left sternomastoid was prevented by a strip of strapping approximating the mastoid to the sternum. The nurse was instructed to adjust pillows so that this was always kept in wrinkles and never taut. Foot-drop was similarly prevented by elastic. On the sixth day the child was very well, but feeding was still carried out in the head-down position to avoid risk of deglutition pneumonia.

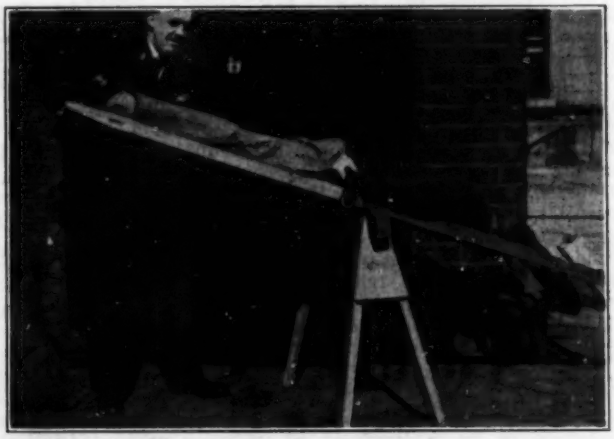
On the tenth day costal respiration ceased for four days. This caused no symptoms, which shows how unimportant is costal respiration compared with diaphragmatic; at rest it is redundant.

On the twenty-sixth day she could just stand unsupported. The neck muscles had recovered. Eventual recovery was complete.

CASE 2. *Landry's paralysis under artificial respiration.*—The patient was an athlete, aged 24, weighing 14 st. and 6 ft. tall. On August 2nd he was in his usual robust health and doing gymnastics. On the 3rd he was rapidly afflicted with paralysis of the legs and trunk, spreading later (partially) to the arms. After August 4th headache was severe. Respiratory difficulty started on the 6th. On the 7th he was admitted to the Sutton Annexe with marked retention of urine and fæces. He was under Dr. D. C. Muir, who very kindly allowed me to try this method of artificial respiration on him. I saw him on the 8th at 3 P.M. His legs were paralysed, arms weak, diaphragm not moving, but the upper ribs could be dragged up by the sterno-mastoids. Cyanosis slight, headache severe, swallowing normal, reflexes reported all absent. He was talkative; mentality a little abnormal and greatly distressed at his awful situation. Ordinary methods of artificial respiration could not have been tolerated in the state he was in. Accordingly at 6 P.M. a mattress was lashed to the special stretcher and the heavy patient lifted on to it easily by four persons. The stretcher was then lifted on to the trestle with his weight balanced over the pivots. A strong strap over his buttocks prevented his slipping (Fig. 2). Blankets covered him and he lay on his back.

Artificial respiration was started at 6 P.M. by rocking through 50° each way, regulated by a home-made mercury egg-boiler which allowed 4 secs. in the leg-down position and 3 secs. in the head-down. The latter promptly caused a few ounces of clear fluid to fall out of the stomach; perhaps the sphincters of the gullet were paralysed. There was some distension from flatus, but not enough to prevent visible excursion of the diaphragm. Evidently he felt relief from the rocking for, in spite of his distress, he demanded it for about five minutes every quarter of an hour.

FIG. 2



Rough apparatus used in Case 2; but here the subject is healthy and the position prone, as if for an unconscious patient.

After helping for three hours I left him in the able hands of our resident, Dr. J. D. Cooper, who spent most of the night with him, aided by two Toc H volunteers. Even with this cheap improvised apparatus artificial respiration was easy

work for one man, who need not be skilled. This is very different to the skill and exhaustion demanded by the ordinary methods.

Dr. Cooper reported that after 8 P.M. his cyanosis and respiratory difficulty increased. Oxygen alone gave no relief. Although the rocking perhaps accentuated his distress, yet he had to have it every alternate ten minutes, because it promptly relieved the cyanosis, which returned when the apparatus was stopped. In short, "the apparatus did what it was asked to do." On August 9th at 10 A.M. Dr. Muir and I saw him together. He had then been seven hours in coma and his ribs and sternomastoids were paralysed. But a most encouraging feature was that the diaphragm was contracting regularly, though rather spasmodically, at 24 to the minute. However, at 12.30 the heart, which had so far been beating with unnatural strength, rapidly failed and he died at 12.45. This was very disappointing because the stage of respiratory failure (often brief) had apparently been tided over; and if the bulbar cardiac centres had not failed, complete recovery in three months was quite possible.

FIG. 3

Extemporised apparatus for prolonged artificial respiration, consisting of a 6-foot ladder on a low fence. The diamond lashing of the cord prevents the ladder sliding or getting oblique on the fence. Coats or blankets, hot bottles, and a rope to strap the buttocks should be added. Schafer's method is used till the apparatus is rigged up.

ADDENDA

(1) *Four skiagrams* (by Dr. Bannen).—These can be described verbally to save illustrations. The first pair shows the baby (Case 1) in the rocking-chair in the head-up and the head-down positions. The diaphragm is seen to have moved from the ninth to the tenth rib—a considerable change of air content. The other pair shows that my diaphragm was displaced 5 cm. when I was rocked on the apparatus through 50° each way. Voluntary respiratory movement was negligible. My chest measurement is 84 cm. Treating it as a cylinder and piston this excursion indicates roughly 1800 c.cm. of air. The shadow of the heart and large vessels is greatly changed in shape but not in area.

(2) *Measurement of air expired* on the rocking stretcher. This amounted to 1500 c.cm. in my son, aged 18 (chest 29 in., height 69 in.), without voluntary respiration. Schafer's method produced only 1000 c.cm. both in him and myself (chest 33 in., height 60 in.). In my son, seven up and down rockings per minute were ample for comfort without voluntary respiration. This would give more than the 6000 c.cm. of air which are said to be needed per minute. Ordinary tidal air is given as 500 c.cm. The method of measurement I used seemed reliable though rough.

If the method is to be tried for respiratory failure in spinal anæsthesia by the heavier fluids, I suggest that the rockings need be only five or six per minute, of which eight to ten seconds should be in the feet-down position and only two seconds in the head-down posture. Thus gravity should help to keep the heavy fluid away from the medulla. Presumably Schafer's method would be tried first, and the rocking apparatus only if prolonged resuscitation proved necessary.

COMMENT

These two cases, and my experiments on the healthy person, show that this gravity method of actuating the inert diaphragm is effective. If used with the patient face downwards, it offers, in my opinion, many important advantages (which I need not detail here) over the ordinary methods in use for resuscitation after drowning or gassing or anæsthetics and the like. Apparatus can be extemporised, as shown for instance in Fig. 3. I hope later to publish a much fuller paper with cases. As these are hard to come by, I should be glad of collaborators. With the experienced help of Mr. W. Riley, of the Wakefield Mines Rescue Station, and of Messrs. Siebe, Gorman and Co., of London, I am engaged in perfecting the apparatus and the method. I conclude that the method is novel because it was not mentioned in the full discussion at the British Association last year.

My thanks are due to Dr. Muir and Dr. Jacobs for their cases; to Dr. Bannen for the skiagrams; and to Ivor S. Eve for much willing help.

FATAL POLIOMYELITIS IN ADULTS

WITH CASE REPORTS

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THE death of three patients from acute respiratory failure of bulbar origin within a period of five days is a dramatic event even in a large general hospital. The three cases here recorded, although showing similar terminal symptoms, presented differences in other respects which gave rise to considerable difficulty in diagnosis during life.

THE FIRST CASE

A nurse, aged 21, had suffered from a slight sore-throat for a week before the onset of the acute illness, for which she had not consulted a doctor, and during the last two or three days she had felt "off colour" and was constipated; she had also complained of insomnia. On the evening of August 30th she complained of slight pain in the neck and aching in the legs, but the temperature was normal; she did not however go on duty. The following morning she had a slight rise of temperature and had pain in the back; she was seen by one of us at 8 P.M. (August 31st) when she complained of pain in the neck, back, and legs. Her condition was in no way alarming, but she was rather restless and had difficulty in moving about the bed owing to the pain; the temperature was 100° F.

On examination there was tenderness on pressure over the neck, where there were some palpable lymph nodes, and there was slight neck rigidity. Kernig's sign was not present, though extreme flexion of the extended leg on the trunk was a little painful. The pupil reactions, fundi, and tendon-jerks were normal, and the plantar responses flexor. The abdominal reflexes however were absent and there was some disinclination to move her legs, although there was no definite loss of power; there were no sensory changes. No abnormality was discovered in the heart, lungs, or throat.

Course of illness.—She spent a very restless night despite a soporific, and about 5 A.M. she became much worse; at 5.30 she was desperately ill, with shallow breathing and cyanosis and complete absence of diaphragmatic movement. She had very little power in the legs but could move her toes; the pupils reacted sluggishly and the voice was feeble, but the tendon-jerks were still normal; consciousness was fully retained; the pulse-rate was now 98, respiration-rate 32, and temperature 97° F. Lumbar puncture was performed at once and the cerebro-spinal fluid pressure was found to be over 300 mm. At 7 A.M. she was unable to speak though she could recognise people;

about this time she began to make plucking movements with her hands. She died at 8.40 A.M.

The C.S.F. contained 60 polymorph cells per c.mm.; chlorides 0·73 per cent.; no organisms seen; culture sterile. A partial post-mortem was carried out, the brain only being removed; it showed no naked-eye abnormality and was fixed intact.

Histology.—Medulla: There are two zones of acute perivascular softening and infiltration round vessels in the dorsal part of the medulla, probably in relation to the cells of the nucleus gracilis; there is perivascular infiltration with fairly large cells throughout the medulla, most marked in the dorsal part. Pons: There is infiltration by microglia and macrophages in relation to the sixth nucleus and substantia ferruginea; ventrally there are no definite zones of perivascular infiltration, but there is abundant infiltration in the dorsal region. Thalamus: There is slight perivascular infiltration of only a few vessels.

THE SECOND CASE

A female, aged 24, was admitted under the care of Dr. R. A. Veale on Sept. 1st. She had enjoyed good health all her life except for attacks of "influenza," which had occurred frequently during the past few years; these attacks consisted of coryza, slight cough, and pyrexia. Fourteen days before admission (August 18th) she developed an attack of the usual type which lasted about five days, but on the eleventh day (August 29th) she again felt poorly and developed aching pains and severe frontal headache; a diagnosis of "influenza" was again made. The following day, that is about 36 hours after the beginning of the recurrence, she felt some difficulty in getting out of bed and about the same time she noticed a feeling of weakness in the left hand. The next morning (August 30th) she found that the left side of the face was swollen, that she was unable to close her left eye, and that on swallowing fluid dribbled from the left corner of the mouth; the pain had disappeared and there was almost complete paralysis of the left arm. Forty-eight hours later she was admitted to hospital.

On admission she was complaining of diplopia on looking to the right, though there was no demonstrable ocular palsy; there was a complete left facial palsy of infranuclear type, otherwise the cranial nerves showed no abnormality. She was unable to raise her head from the pillow or to sit up. The left arm showed complete flaccid paralysis, and there was marked weakness and hypotonia of the right. The left leg was weak and hypotonic, the right being normal; the tendon-jerks in the arms were sluggish, the left knee-jerk was absent, the other jerks being normal; the left upper abdominal reflex was absent, the left plantar response extensor, and the right equivocal.

Course of illness.—The following day (Sept. 2nd) the right arm and the left leg were much weaker, the left lower and right upper abdominal reflexes had disappeared, both knee- and ankle-jerks were absent, and both plantar responses extensor. There was now some difficulty in coughing. On Sept. 3rd there was complete flaccid paralysis of the left leg with increasing weakness of the right; all the tendon-jerks were now absent, as were the abdominal reflexes; fine nystagmus was noted on looking to the left. During the next 24 hours there was increasing weakness of the right limbs; on the night of Sept. 4th–5th she developed respiratory distress, with numerous adventitious sounds in the chest, and cyanosis; death occurred at 11.50 A.M., consciousness being preserved up to the last.

The C.S.F. taken on Sept. 2nd showed four lymphocytes per c.mm.; protein 50 mg. per 100 c.cm.; chlorides 0·72 per cent. Blood Wassermann reaction negative.

Throughout the illness the fundus oculi was normal, there were no sensory phenomena, and no cerebral symptoms. There was neither sphincter disturbance nor insomnia. The temperature was subnormal throughout (97° to 98° F.), and the pulse-rate varied from 84 to 100, the respiratory rate being 24 with a terminal rise.

Post-mortem examination was carried out by Dr. J. G. Thomson at 3 P.M. on the day of death. There was severe mucopurulent bronchitis and intense congestion of the liver. The brain and spinal cord were fixed intact. Bacteriological investigations were carried out by Prof. J. W. McLeod, to whom we are indebted for the following details. Two rabbits were inoculated by corneal scarification with emulsion from the cortex and the medulla, and two other rabbits by intracerebral inoculation; all these animals remained normal. A monkey (*Macacus rhesus*) was inoculated by intracerebral injection; it was ill for three days and then returned more or less to its normal condition; about three weeks later it was noticed to be subdued and quiet and at present it lies in its cage and after walking a few steps will lie down exhausted; when walking it appears to have weakness of all its limbs though there is no paralysis.

Histology.—The spinal cord shows the typical changes of poliomyelitis with perivascular softening and infiltration with macrophages. Medulla: There is perivascular infiltration only. Liver: Apart from severe congestion there are no histological changes.

THE THIRD CASE

A boot repairer, aged 30, was admitted under the care of Dr. Veale on Sept. 2nd with a history of pains in the legs of one month duration; more recently there had been gradual loss of use of the legs.

The temperature was 99·2° F., pulse-rate 152, and respiration-rate 30. He was very pale, short of breath, and was vomiting everything; the liver was palpable and there was some clubbing of the fingers. There was a leucocytosis of 13,700 per c.mm. (polymorphs 91 per cent.), otherwise the blood showed nothing abnormal. The pupils were contracted and reacted very sluggishly to light; fundi normal. There was bilateral sixth nerve palsy, other ocular movements being normal. The legs showed complete flaccid paralysis with absence of the left knee- and ankle-jerks, those on the right being just obtainable; the plantar responses were equivocal. There was no sphincter disturbance. The cyanosis and respiratory distress increased and he died at 7.15 A.M. on Sept. 4th.

Post-mortem examination was carried out by Dr. Thomson. The lungs showed œdema and there were small bilateral pleural effusions. The stomach showed well-marked pyloric stenosis due to a healed ulcer. The brain and spinal cord were fixed intact and showed no naked-eye changes.

Histology.—There was no histological evidence of disease and Dr. J. G. Greenfield, who kindly examined the sections, thought the case to be probably one of Landry's paralysis.

COMMENTARY

The first of these cases is remarkable for its fulminating course, the patient dying within 36 hours of the onset of any definite symptoms and within 12 hours of the onset of physical signs; the first signs to appear were slight neck rigidity and loss of the abdominal reflexes, and there was marked tenderness on pressure over the shoulders and neck, in fact at this stage the possibility of fibrositis had been considered. The second case was a typical example of poliomyelitis of the spreading spinal type and it is of interest to note the left hemiplegic emphasis as well as signs of pyramidal involvement. The third case resembled the second in many respects and the two could not be differentiated clinically.

In all three cases consciousness was fully retained even though there was ultimate inability to speak. The cerebro-spinal fluid in the first case, the examination of which had not been completed when the patient died, was characteristic of an early stage of poliomyelitis, but the fluid in the second case was normal, although J. S. Collier[1] claims typical changes in 98 per cent. of cases.

The incidence of bulbar involvement in poliomyelitis is low (W. G. Scott Brown[2]), though the mortality in such cases is high, and it is interesting that these are the first two cases of poliomyelitis in adults that have been seen in this hospital for at least two years; nor have they coincided with any recent increase in the number of children admitted with the disease.

Unfortunately we had no opportunity of giving anti-poliomyelitis serum in these cases, though in this connexion W. D. Ayer[3] states that "bulbar cases are to be left severely alone" and in his opinion "lumbar puncture and intraspinal serum are sharply contra-indicated"; Collier, on the other hand, states that lumbar puncture can do no harm. It is possible that poliomyelitis serum might have saved the life of Case 2, though it would have been of no value in Case 3.

In conclusion, we are recording these cases in view of the epidemic of poliomyelitis at present existing in this country and would emphasise the difficulties

[1] THE LANCET, 1927, i., 321.
[2] Ibid., 1931, ii., 1287.
[3] Proc. Inter-State Postgrad. Med. Assembly (North America), 1928, p. 319.

in diagnosis in each of them, the first on account of its fulminating course and scanty signs, the second because of the normal cerebro-spinal fluid, and the third on account of its resemblance to poliomyelitis in spite of its pathological distinction.

We wish to express our thanks to Dr. Veale for permission to use the clinical notes of these cases, and to Dr. Greenfield for his advice on the histological appearances.

Clinical and Laboratory Notes

THE TREATMENT OF LARYNGEAL TUBERCULOSIS

TWO PRACTICAL POINTS

By Sir James Dundas-Grant, K.B.E., M.D. Edin., F.R.C.S. Eng.

CONSULTING SURGEON TO THE CENTRAL LONDON THROAT AND EAR HOSPITAL AND TO THE BROMPTON HOSPITAL

In dealing with tuberculosis of the larynx we have to afford relief from pain by every means in our power so as to counteract the steady downward progress which it initiates and maintains. The depressing effect, as much as the interference with nutrition, is from the psychological point of view deplorable. I and others have fully described methods which have found their way into current practice, such as the inhalation of such powders as anæsthesin and orthoform, the application of the galvano-cautery and alcohol injection into the superior laryngeal nerve. I have also pointed out elsewhere that a sudden attack of pain in swallowing, though sometimes due to an outburst of pharyngeal tuberculosis, is sometimes found to be the result of an ordinary acute tonsillitis passing off in a few days.

I wish, however, to indicate a cause of what patients call "pain," the relief from which is anxiously desired. In reality it is a painful "burning" stiffness of the pharynx caused by the drying and inspissation of mucus on the back wall, and is experienced chiefly on waking. Patients have frequently described the discomfort as severe pain and have been delighted to have it removed by gargling with a little bicarbonate of soda in water, warm if possible, otherwise cold. Such a solution can be put into a thermos-flask at night so as to be ready for use when the patient wakes up. I am sure that this condition is overlooked while deeper-lying sources of pain are being sought for. It seems a trifling method of treatment, but it gives great relief and is, of course, available to any practitioner if he only keeps the condition in mind and looks for it.

My second practical point is addressed to experts rather than to practitioners in general. In other places I have dwelt on pain as an indication and the strongest one for the galvano-cautery, and by no means as a contra-indication, as has been suggested. The typical tearing pain is almost invariably caused by a spot of ulceration, and if the exciting spot can be localised the application of a fine galvano-cautery point destroys the exposed nerve-endings and removes the pain. If there is a very small area of ulceration it may be difficult to find, and occasionally it lies concealed by an overhanging infiltrated epiglottis at the place where this joins the ary-epiglottic folds. If, on the other hand, the ulceration is very extensive, it may be only at some localisable spot that the pain is excited, and if the cautery is applied to other parts of the ulcerated area and not to the pain-exciting one, the relief is not forthcoming and disappointment ensues. The practical point that I wish to emphasise is that a laryngeal probe coated with cotton-wool should be applied to various parts of the larynx until the patient makes it known that the pain-producing spot has been touched. After cocainisation of the part the fine point of the galvano-cautery should be stuck into the spot, and in the absence of other sensitive spots pain is usually removed.

I see from time to time an ex-policeman who suffered from chronic pulmonary tuberculosis. When he was first referred to me swallowing was so painful that he was unable to take enough food to fight against the disease. I found a small ulcer on the middle of the margin of the epiglottis. I applied the galvano-cautery to the painful ulcer, and from that moment the excruciating pain disappeared; he was able to take food and make a good recovery, ultimately working hard on a chicken-farm.

Within the last few months I have been treating a man who suffered from fairly advanced tuberculosis. Temperamentally depressed, he was the picture of resentful misery and complained of intense pain in swallowing, especially on the right side. He used anæsthesin and orthoform powder, and had the superior laryngeal nerve injected on two occasions with only slight temporary benefit. I then tested the various parts of his larynx with the probe and found on the right ary-epiglottic fold an area of extreme tenderness. I punctured this spot with the galvano-cautery and hoped for the best, but in view of the patient's temperature I feared he would go rapidly downhill. A fortnight later when I asked to see him I expected to hear that he was confined to bed if, indeed, still alive. On the contrary, however, he had improved from the time of the localised galvano-cautery, took food, lost his depression, and was reported to have gone for an "outing." When next seen, he was fairly strong and quite cheerful. I am convinced that without the relief afforded by the localised galvano-cautery he would not have rallied.

My first "practical point" is addressed to the practitioner as simple and efficacious; the second is naturally more within the scope of the specialist, but with the increased attention to laryngology it may be applied by others. To all those who wish to practise such manipulations I cannot too strongly recommend the use of the left hand for holding the laryngeal mirror, in season and out of season, so as to leave the right one free for the handling of intralaryngeal instruments.

FŒTAL ASCITES

By Richard H. Hunter, M.D., M.Ch., Ph.D. Belf.

LECTURER IN ANATOMY, QUEEN'S UNIVERSITY, BELFAST

Cases of fœtal ascites, though rare, have been observed from time to time, and are of considerable interest to the obstetrician because of the difficulty in delivering the child's distended abdomen. The condition has been ascribed to many causes, among them (*a*) obstruction to the portal circulation, due to perihepatitis, syphilitic gumma, or tumours pressing on the portal vein; (*b*) chronic peritonitis due to syphilitis; (*c*) tumours or distended bladder pressing on the large vessels of the abdomen; (*d*) hypoplasia of the urinary organs; and (*e*) defects in the circulatory systems—e.g., absence of the ductus venosus or splenic vein. The present series of cases of fœtal ascites, though a short one, is of sufficient interest to warrant its publication because it includes examples of most of these causes.

Case 1.—The abdomen of this specimen was enormously enlarged. There was no trace of an anal opening, and male external genital organs were present. The fluid which had caused the distension had been lost during the confinement, owing to the necessary surgical interference, and six pints of fluid were required to re-distend the abdomen to its original condition. An enormous "cyst" was found occupying the

pelvic and right and left lumbar and subphrenic regions. A diverticulum of the "cyst" passed upwards, behind, and to the right of the coils of intestine, which were smaller than normal for a full-term infant. The lower end of the large gut was greatly dilated with meconium and was adherent to the upper and back portion of the left side of the "cyst"; the gut, however, had no opening into the "cyst," but ended blindly. The left kidney could not be distinguished, but in its position, below the suprarenal gland, there was some thickened tissue at the upper end of an enormously dilated left hydronephrosis, and this proved on microscopical examination to be the small amount of persisting kidney tissue. Both ureters were greatly dilated, and both passed through the wall of the "cyst." The interior of the "cyst" presented the appearance of a distended and greatly hypertrophied bladder, marked by numerous ridges due to the hypertrophy of the underlying muscle. The ureters opened into it by exceedingly small orifices which were by no means easy to find. The pelvic portion of the "cyst" was perfectly smooth; there was no trace of an opening from it. The testes were smaller than normal, and lay on the lower part of the dorsal surface of the "cyst." They were connected to it by short, well-developed, and unenlarged vasa deferentia which ran transversely medially, and opened into a shallow median diverticulum of the "cyst." There were no seminal vesicles. The maternal blood reactions were reported: Harrison ++, Fleming ++.

The "cyst" seems to have been an enormously distended urogenital sinus and ventral cloaca. The shallow diverticulum into which the vasa defferentia opened was smooth and had a thinner wall than the rest; this was the part of the urogenital sinus which should normally form the prostatic part of the urethra. This case, although described as one of "fœtal ascites," is really a case of arrested development of the hind-end of the fœtus after the urorectal septum had separated bladder from rectum, with imperforate anus and failure of fusion of the ectodermal part of the urethra with the entodermal part derived from the urogenital sinus. This defect of the urinary passage is one of the most uncommon forms of anomaly in the human fœtus, and in the literature at my disposal I have been able to find only one other similar case.[1]

FIG. 1 (Case 2)

Dissection in Case 2, showing the nodular appearance of the atrophic liver.

[1] Cruickshank, J. N.: Brit. Med. Jour., 1921, ii., 980.

CASE 2 was a full-term infant, delivered with the aid of forceps, and on external examination it appeared normal except for great distension of the abdomen. On opening the abdomen three pints of pale straw-coloured fluid escaped. The urinary organs were normal, but the liver was smaller than is usual in the newly born and had the rough nodular appearance typical of an atrophic multilobular cirrhosis (Fig. 1). Microscopical examination confirmed this diagnosis. The Levaditi technique for the demonstration of spirochætes was used on the liver, but they were not detected. The maternal blood count was reported: Harrison ++, Fleming ++.

FIG. 2 (Case 4)

Dissection in Case 4, showing the position of the large lobulated kidneys within the abdominal cavity.

The condition of this liver appeared to be due to fœtal syphilis or the chronic toxæmia of a maternal syphilitic infection.

CASE 3 was a fœtus of about the eighth month, born without assistance after a prolonged labour. It had the characteristic appearance of a generalised œdema. On opening the abdomen 160 c.cm. of deep amber-coloured fluid escaped, and from the left side of the opening an enormously enlarged spleen presented itself. This organ was found to measure 7 in. in length. The splenic artery was the normal size for a newly born infant, but the portal and splenic veins were small and had so narrow a lumen that a bristle could only be inserted with difficulty. This disparity between the splenic artery and vein seems to account for the engorged condition and enlargement of the spleen.

This was, therefore, a case of hypoplasia of the splenic and portal veins. The ascites was probably due to the hypoplasia of the portal rather than of the splenic vein, as it is known that experimental ligature of the splenic vein does not cause ascites, while ligature of the portal vein does. All the other organs of the body appeared to be normal, apart from the œdematous infiltration throughout the tissues. There was no evidence of syphilis in the fœtus, and the maternal blood was reported negative to both the Harrison and the Fleming reactions.

CASE 4.—This infant was apparently full-term and was delivered with forceps. It presented a generalised œdema and a distended abdomen. On opening the abdomen 200 c.cm. of amber-coloured fluid escaped, and two large lobulated, tumour-like kidneys were exposed (Fig. 2). The right kidney weighed 140 g. and the left 135 g. The ureters were extremely small, and it was not possible to pass even a fine bristle into their lumen. The bladder was small and

contracted. The veins of the abdominal organs were engorged and the liver was congested. The œdematous condition of the organs extended to the heart, lungs, and brain. Microscopic section of the kidneys showed the early stages of congenital polycystic disease; the secreting tubules were greatly dilated and the glomeruli were congested. Unfortunately in this case, which was seen in private practice, the blood reactions were not tested. A history of previous miscarriages is, however, suggestive of syphilitic infection.

Three of the cases described are cases of true fœtal ascites, two having generalised œdema. One of these is due to a congenital maldevelopment of the kidneys, and the other two to interference with the portal system. In two of the four cases there is a definite maternal history of syphilis; in one there is a suggestive history of miscarriages; and in one there is no direct evidence of syphilis. This proportion of syphilitic cases is not in agreement with that usually described. Fordyce [2] collected 63 cases of fœtal ascites and found that syphilis could be definitely proved only in eight. Birnbaum and Blacker,[3] on the other hand, state: "The most frequent cause of this condition is no doubt syphilis." It seems probable that the modern methods of diagnosis of syphilis will show Birnbaum and Blacker to be right.

RESUSCITATION OF INFANTS

WITH CARBON DIOXIDE AND OXYGEN

By J. B. Blaikley, M.B. Lond., F.R.C.S. Eng.
GYNÆCOLOGICAL AND OBSTETRIC REGISTRAR, GUY'S HOSPITAL

Of recent months, following the long-delayed appreciation of the work of Haldane, Pembrey, and others in this country, and the work of Yandell Henderson and others in America, attention has been focused on the use of carbon dioxide as a respiratory stimulant, so that several articles have appeared in current journals, dealing more especially with its post-operative application, but also pointing out its value in the resuscitation of the newly born infant. My excuse for the present paper is to put on record the success that has attended the use of carbon dioxide in the midwifery practice of Guy's Hospital during the past six months, and, further, to make one or two points that have been learnt as a result of our experience. Originally the "sparklet" pocket outfit was used, but this has been modified by the addition of a rubber bag of about 3–4 litres capacity, and a face-piece of transparent celluloid [4]; furthermore, a mixture of carbon dioxide, 5–7 per cent. and pure oxygen is always used, for reasons to be given later.

While it must be very seldom that a newly born infant actually dies from asphyxia, this does occasionally happen, and for every one there are numbers in whom respiration is only established after prolonged asphyxia. Though it is difficult of proof, it seems only too likely that the cells of the central nervous system are liable, in these latter cases, to suffer from the lengthy period of anoxæmia. This may be inferred by analogy with older children, in whom the results are more apparent; for example, I well remember a child who was anæsthetised with gas and oxygen, but was allowed to become markedly asphyxiated; this child for days afterwards was completely irrational to the point of insanity. Again, occasionally an infant difficult to resuscitate lives two or three days and then dies after increasing difficulty with respiration and feeding; post mortem, nothing except the subserous petechial hæmorrhages of asphyxia are found. Death is presumably in such cases delayed but none the less the result of asphyxia at birth. Lastly, it must still be borne in mind that many authorities consider the spastic infantile paralyses to be the result of prolonged asphyxia at birth. It therefore does appear to be the right and proper course to limit the time during which asphyxia is present to as short as possible, for there is no reason to conclude that the brain of a newly born infant is immune to the damaging results of anoxæmia.

The first need of the child is oxygen, and for this reason we have used a mixture of carbon dioxide and pure oxygen; in this way, it is ensured that the first few breaths achieve the maximum in oxygenating the anoxæmic blood. From experience we are convinced that more rapid recovery is thus effected than from giving carbon dioxide mixed with air. When given by the closed method used, 5–7 per cent. carbon dioxide is sufficient to stimulate respiration, higher percentages seem unnecessary and may even be toxic in action.

The closed method of administration with a bag and face-piece has several advantages. In hospital, large cylinders of gas are available, but in portable form it is necessary to conserve the supply of gas. The bag may be filled and then the infant allowed to breathe in and out of it, the percentage of carbon dioxide slowly rises, and that of the oxygen slowly falls; 3–4 litres will last ten minutes, more than long enough for full establishment of deep respiration. Of even greater advantage is the fact that it is possible to give artificial respiration, sucking the gas in and out of the bag, so that the full use is made of the volume of lung expanded, the oxygen absorbed relieving the anoxæmia, and the carbon dioxide stimulating the respiratory centre. In the absence of spontaneous respiration, artificial respiration by Sylvester's method will expand about half of the lung volume. It is necessary to have an assistant to hold the mask in place and the jaw forward; he is also able to steady the infant by holding the feet. We have used bent tongue forceps [5] in order to ensure that there is a clear airway.

In addition to the benefits outlined above, there is no doubt that much anxiety is saved the obstetrician in rapid establishment of respiration; also, as has often been pointed out, full expansion of the lungs is to be anticipated, and there is little fear of subsequent symptoms of atelectasis.

I would thank the obstetric surgeons of Guy's Hospital from whose cases the experiences recorded above have been obtained, in particular Mr. Cook, who originally excited my interest.

[2] Fordyce, W.: Teratologia, 1894, i., 143.

[3] Birnbaum, R., and Blacker, G.: Malformation and Congenital Diseases of the Fœtus, London, 1912, p. 184.

[4] I am given to understand that Messrs. Sparklets (Angel-road, London, N.18) are now making this mask standard.

[5] As made by Messrs. Down Bros., 21, St. Thomas's-street, S.E.1.

COVENTRY HOSPITALS.—The report of the Coventry and District Crippled Children's Guild for the year ending March 31st last shows that 1439 patients were treated, of whom 264 were discharged cured and 65 improved. There were over 10,000 attendances at the clinics. The report calls attention to the number of parents who refuse to have their children treated, and expresses a definite opinion that the law should compel parents, in case of need, to give their children the benefit of treatment.—Captain W. F. Strickland, M.P., recently formally opened the Alexander Private Hospital at Coventry. The institution has accommodation for 14 patients, and there is a theatre with other adjuncts.

MEDICAL SOCIETIES

THE MEDICO-LEGAL SOCIETY

AT a meeting of this society on Oct. 27th the chair was taken by Lord RIDDELL, the President, and a paper on

Fraud in Medico-legal Practice

was read by Sir JOHN COLLIE. He advised the practitioner examining a medico-legal case to dispense with his bedside manner, for this was a business transaction. He must, however, retain his tact, for judgment, skill, foresight, and even experience were beads unstrung without infinite tact. The consulting-room was the best place for the examination; it was the doctor's own house, his own room, and he was master; the mental effect was enormous. The examiner should not be in too great a hurry to diagnose a malingerer, lest he should have the experience of an honorary surgeon who had walked into his ward one day and said to his house surgeon, "Well, Jones, and how are they to-day?" "All well," the house surgeon had replied, "except the malingerer in the corner, and he died last night."

A medical report should be in plain and business-like language. Insurance companies were neither interested nor impressed by technical terms. If technicalities must be used they should be put in brackets. Notes should be taken at the time of examination and preserved. In a difficult case the report should not be written until a few hours, preferably a day, after the examination. The proportional values were astonishingly different when viewed in perspective. Time should not be wasted labouring academic points of no practical utility. A report should not be biased by sympathy. Sentiment had its proper place, but was ill-matched in co-partnership with business. The late Sir George Savage had said that an opinion must be formed along one of two lines, one representing judgment and the other sentiment, but that those lines were parallel and never met.

The medical witness must not be surprised if it was insinuated in court that he was fundamentally ignorant of the elementary facts of his profession. He should take no notice. It was all a game, and he had better try to enjoy it. One piece of advice the speaker urged: when a case is lost, forget it and leave the solicitors to worry. The conscientious performance of one's duty in insurance work did not lead to an excess of popularity. The witness should never be afraid of admitting that he was not omniscient, but when the road bent abruptly he should take short steps. He should tell counsel with apparent candour that he was not a specialist; that a specialist knew everything about something, but that he had always aimed at knowing something about everything. This was not a clever statement, but it appeared so, and might help the witness round an awkward corner in the rough and tumble of cross-examination. Sometimes he would be asked whether a man was malingering, and would know that if he said "Yes" everyone in court would be angry. The best answer was that he had thoroughly examined the man, that it was true that he complained of many things, but that no physical signs could be found. The witness could truthfully say that he did not know whether this was a malingerer or not. It might then be put to him: "This man is not working and you say he is not a malingerer." The right answer would probably be: "He is really physically fit, but he requires that push towards usefulness which many men off work require. He is an irresolute individual, and would have a little inconvenience at first, which a reasonable man would put up with. He has not any real incapacity, but he has a feeling of inability caused by nervousness, all of which would be overcome by work. He is brooding over his recent injury, and the compensation he is receiving takes away the stimulus to work. Half-wages mean semi-starvation, and have a bad physical and moral effect." The witness should never go into the box without having had a radiogram of his subject taken, or he would be sure to be confronted with one taken by the other side.

Pain in the back was in most cases psychical, not physical. Nine-tenths of the subjective symptoms met with in trifling accidents were the result of auto-suggestion. The art was to determine how much was due to trauma and shock and how much to a perverted mental outlook. Neurotics who had had accidents were in much more need of treatment than was their traumatism, for they were facile and their thoughts ran along the lines of least resistance. The keynote to the successful treatment of a neurasthenic was to get the patient to make an optimistic inventory of his mentality. Re-education, both mental and physical, was the be-all and end-all of the cure. There was a definite relationship between the duration of an illness and the loss of the work habit; it was of the first importance to recommend return to work at the earliest possible date. Counter-suggestion was of infinite value, but if it was to succeed it must be immediate, forcible, continuous, and applied at the psychological moment. Suggestion was the art of getting an idea into someone's head without his knowing it. Everyone practised it daily—by manner, by facial expression, by mode of address, by self-confidence, and by clothes. Suggestion must not be put in a bottle. It could not, however, be practised as a duty; it was the work of an enthusiast. The man who threw himself into it, body, soul, and spirit, would succeed while half his neighbours were spending their time writing prescriptions for bromide of potash and the other half writing chits "to account rendered." Such men should take a holiday, for the doctor's holiday was the patient's opportunity.

Functional nerve disease was a combination of reality and unreality. It was like a battery with everything in working order and nothing lacking except the capacity to switch on the current. Many of these unhappy people might become chronic invalids or might return to work; the result depended entirely on the doctor. Very much more than was generally supposed depended on whether the doctor threw the weight of his personality into the diagnosis of traumatic neurasthenia and hysteria. His most valuable asset was a knowledge of human nature.

DISCUSSION

Sir BERNARD SPILSBURY said that the post-mortem room, like Sir John Collie, was a great revealer of malingering. Allegations were sometimes made in the coroner's court that death was connected with some previous accident, which had often taken place a long time before, and the alleged sufferer had drawn considerable sums of money in compensation. In other cases a relative suddenly remembered after death that the deceased had undergone an accident some years previously. In a very large

number of cases the alleged accident could be shown to have no connexion with the death, but obscure causes were sometimes found for otherwise mysterious deaths.

Dr. MORGAN FINUCANE took exception to Sir John's advice to doctors examining such cases to harden their hearts, put off their bedside manner, and remember that the work was "business." The doctor's business, for whichever side he appeared, was to work for humanity and to deal with his cases from a human and sympathetic point of view. Functional nervous disease was in itself a reason why an injured man should continue to draw compensation, and the courts had held during the last few years that nervous troubles arising out of employment were ground for recompense.

Mr. SYDNEY VERNON, as a solicitor in general practice, gave the opinion that one of the finest cures for neurasthenia was a lump sum in settlement. He urged doctors to use simple language in their dealings with laymen.

Mr. W. M. WALKER denied that the best place for the discussion on compensation was the medical consulting-room. The Bar had an invariable rule that counsel did not leave chambers for the purpose of consultation, and he felt that this was right. The case was to be tried not in a court of medicine but in a court of law, and the atmosphere of a barrister's chambers was a more desirable approach towards the courts. The Bar resented the tendency towards a medical tribunal which would be induced if barristers had to go to the medical consulting-room. The speaker pleaded for the simplification of the mass of certificates necessary under the National Health Insurance Act, which demanded that a doctor should be almost as good a draughtsman as a conveyancing solicitor. Some scheme should be evolved, he held, for deciding whether a man was a malingerer or not without the present multiplicity of consultations. Doctors should be less reluctant to give evidence against one of their own profession who had clearly made a mistake.

Dr. R. A. LYSTER took exception to Mr. Walker's criticism of the procedure under the Act. The Institution of Medical Referees had deterred many persons at the outset from making claims, and these officers had frequently exposed unjustified demands on the fund. A doctor had no need to be a draughtsman, but only to give rather more care than before in coöperating with the approved society.

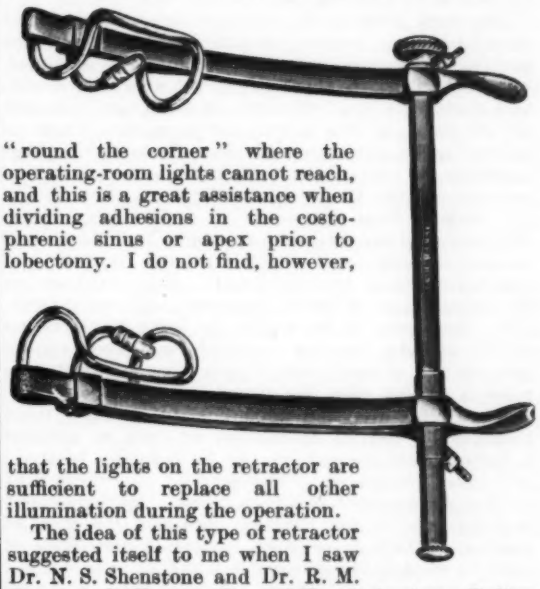
The PRESIDENT said that in his experience injured workmen were only too anxious to get back to work, and often made nuisances of themselves by hanging round the works before they were fit. He stressed especially the necessity for medical witnesses to learn how to behave in the witness-box. He reminded doctors of their great responsibility towards a claimant and his family in deciding whether or not the injured man should return to work.

LEEDS MENTAL DEFECTIVES.—Dr. Arthur Hawkyard, chairman of the Leeds corporation mental health services committee, has recently opened extensions of the Meanwood Park Colony. There are seven new buildings, consisting of three villas for adult female defectives, each housing 60 patients; two villas for 50 boys and 50 girls respectively; a villa for 20 male and 20 female low-grade patients; and a school. The buildings have been placed round Meanwood Hall, which is the headquarters of the colony. The cost has somewhat exceeded £52,000, but it is expected that £5000 per annum will be saved by transferring patients from other institutions outside the city.

NEW INVENTIONS

A RIB-RETRACTOR FOR MAJOR THORACOTOMIES

THIS instrument is a modification of the ordinary abdominal retractor. The arms are longer and slightly curved so that they will lie against the chest wall; also the blades are 2¼ inches wide and curved to a semicircle. In addition it carries a 3-volt lamp on each side for illumination. The light carriers, which are curved to the shape of the blades, clip on to the arms and at their other ends are connexions for the electric leads. These leads are rubber-covered and sterilised by boiling. The lights will illuminate



"round the corner" where the operating-room lights cannot reach, and this is a great assistance when dividing adhesions in the costophrenic sinus or apex prior to lobectomy. I do not find, however, that the lights on the retractor are sufficient to replace all other illumination during the operation.

The idea of this type of retractor suggested itself to me when I saw Dr. N. S. Shenstone and Dr. R. M. Janes at the Toronto General Hospital using a Balfour abdominal retractor for the ribs in thoracotomies for one-stage pulmonary lobectomies.

It is not intended that this instrument be used for forcing the ribs apart as Quervain's rib-spreader is used, but as a retractor to maintain the opening after the ribs have been spread. A description of a thoracotomy will best illustrate how the instrument is used:—

The intercostal muscles and parietal pleura of the selected intercostal space are divided from the costal cartilage in front to the transverse process behind. The ribs above and below the incision are divided posteriorly at the tip of the transverse process, the fingers of the two hands are then inserted into the chest and the ribs steadily but forcibly pulled apart. The hands are then withdrawn and the rib-retractor is inserted and opened out. By this means one obtains in an adult a spread of 4–4½ inches between the ribs at their widest part.

I have used this thoracotomy for lobectomies; it also provides an excellent approach in operation for diaphragmatic hernia and exposure of the œsophagus or mediastinum in certain cases. This approach to the hemithorax causes surprisingly little shock, provides an enormous opening which can be easily and rapidly closed, and leaves no deformity of the chest wall.

I would like to thank Mr. Schranz, of the Genito-Urinary Manufacturing Co., for the trouble he took in making this instrument for me.

H. P. NELSON, M.B., F.R.C.S.

REVIEWS AND NOTICES OF BOOKS

Radiotherapy in Cancers of the Upper Air-passages

The Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air-passages. By W. DOUGLAS HARMER, M.A., M.B., F.R.C.S. London: John Murray. 1932. Pp. 85. 6s.

Mr. Douglas Harmer has performed a valuable service in publishing his Semon lecture of last year [1] in book form, for the subject matter of his address necessarily involves the use of numerous statistical tables which demand close study and are not easily to be digested during the delivery of a lecture.

The work gives details of the technique and results of radiotherapy, not only as practised by Mr. Harmer and his colleagues at St. Bartholomew's Hospital, but of workers in this subject all over the world, and deals with the treatment of malignant tumours of all parts of the upper air-passages. There is neither index nor table of contents, and the page headings do not indicate which region is under discussion, so that it is rather difficult to find rapidly the details about treatment of a particular organ. The statistics supplied do not readily lend themselves to analysis, but some of Mr. Harmer's opinions and conclusions may be mentioned. His insistence on the importance of early diagnosis and early treatment loses none of its weight by being a reiteration of an already familiar warning, and this applies also to his dictum that "under no circumstances must a cancer case be placed on a waiting list." He considers it very dangerous to damage these tumours by partial operations, or even to perform a biopsy until the patient can be radically treated; it is safer to remove a fragment by endothermy or after ray treatment has been given. He believes it is a mistake to use the thin filters of 0·5 mm. of platinum which have been in vogue, and finds it safer to employ filtrations of 0·6, 0·8, or even 1 mm., in order to prevent œdema, perichondritis, and late reactions.

In the treatment of intrinsic growths of the larynx Mr. Harmer, as is well known, is a pioneer of the application of radium by means of needles inserted through a fenestration in the thyroid cartilage; this has given him such good results that he no longer considers that it is ever necessary to remove these growths by surgery. As regards the anæsthetic, he employs gas and oxygen with a small amount of ether after grs. 3 of nembutal by the mouth, and morphia gr. ¼ with atropine gr. 1/100 hypodermically. Sepsis must be avoided at all costs; it is generally possible to prevent suppuration by closing the skin wound completely. Infected teeth should always be removed previously. The growth should never be damaged, care being taken not to cut through the perichondrium which surrounds it. Tracheotomy should not be performed if the opposite cord is movable and the glottis adequate; when in doubt the front of the trachea can be exposed and left ready for an opening if necessary. With these precautions he has had only one death after this operation in 47 patients. The results have been very good among those cases suitable for thyrotomy, which operation, it may be mentioned, also gives very good results; that it is less good among those suitable for laryngectomy, and still less in inoperable cases, is to be expected and accentuates the necessity of early diagnosis and treatment. The remainder of the book deals with the pharynx, palate, cheek, and nose and accessory sinuses. Numerous statistics are provided, and there is a good bibliography.

The monograph will be valuable to specialists in this field, and of value to all practitioners who meet with a patient suffering from cancer of these regions.

[1] See THE LANCET, 1931, ii., 1057.

Les réticulocytes et les réticulocytoses

By Dr. C. M. LAUR, Préparateur Adjoint à la Faculté de Médecine de Paris. Paris: G. Doin et Cie. 1932. Pp. 160. Fr.35.

THE occurrence and behaviour of the reticulocytes in the circulatory blood has been closely studied in recent years. Dr. Laur reviews the early literature dealing with these immature cells in great detail, and also discusses fully the chemical and physical nature of the reticular substance. He concludes, as the result of his own experimental work, that the punctate basophilia of lead poisoning is a different phenomena from the reticulum of the young red cell, a conclusion which might be questioned by many hæmatologists. The pathological conditions, in which a transitory or permanent high reticulocyte count is found, are discussed, and many examples from the author's own case records illustrate this chapter. Unfortunately some important recent work is omitted. The type of curve found in microcytic anæmias in response to iron therapy is not discussed. Little stress is laid on the strictly quantitative nature of the reticulocyte response to adequate treatment in pernicious anæmia. The author certainly states that he has found it impossible to enter into all the details of recently published work, but it is disappointing to find a specialist who takes the trouble to write a monograph unwilling to present the common reader with an up-to-date analysis of his subject.

Quick Reference Book for Medicine and Surgery

Eighth edition. By G. E. REHBERGER, A.B., M.D. London: J. B. Lippincott Company. 1932. In 11 parts. 65s.

THIS large volume claims to be a clinical, diagnostic, and therapeutic digest of general medicine, surgery, and the specialties, culled "extensively and intensively from modern literature, and systematised." Diseases and disorders are arranged alphabetically in each of the 11 sections, and a thumb-index to each section facilitates quick reference. The compilation has been done single handed, and it is almost inevitable that an expert looking at the particular section that concerns him will find something to criticise—either some inaccuracy, or some information that is now out of date. But the fact that the articles under each heading do not bear the stamp of the expert will not distress the average reader, who will find here what he seeks—a concise note setting out essential points. The allotment of space is not always wise—for example, tables for finding the pH value of a solution would seem unnecessary in a book designed to meet the needs of a busy practitioner. But of the mass of information provided the greater part will be found useful at one time or another.

Laboratory Service and the General Practitioner

By ARNOLD RENSHAW, M.D., Director of the Laboratory of Applied Pathology and Preventive Medicine, Manchester. London: Humphrey Milford, Oxford University Press. 1932. Pp. 267. 10*s.* 6*d.*

THE object of this book is to interpret to medical men, be they general practitioners, specialists, or consultants, the application and meaning of laboratory work in clinical medicine. The scheme of the book is well designed, and few instances in which the laboratory can help the practitioner escape mention; one such omission which might be rectified in future editions is the failure to mention *Br. abortus* as a possible cause of prolonged pyrexia. Instruction on the collection of specimens are detailed and precise. In the section of blood grouping and matching, the author has adhered to the old numerical nomenclature instead of adopting that according to the presence or absence of the agglutinogens A and B. The numerical nomenclature has been the cause of much confusion in the past and might now well be forgotten. A word of warning about the danger inherent in blood matching or grouping tests performed by those not thoroughly conversant with laboratory technique might have been advisable.

Dr. Dan McKenzie supplies an introduction in which he wholeheartedly recognises that pathology is not the "handmaiden" of clinical medicine, but an integral part thereof. Far from wishing to keep the pathologist chained to his bench, he realises that in clinical work the best results are attained when there is direct touch between the expert pathologist and the patient. Dr. McKenzie hails the advent of the "physician-pathologist" with confidence in his power to aid in the advancement of medicine.

Tuberculose osseuse et osteo-articulaire

By ETIENNE SORREL, Chirurgien de l'Hôpital Trousseau, Ancien chirurgien en chef de l'Hôpital Maritime de Berck; and Mme. SORREL-DEJERINE, Ancien interne des Hôpitaux de Paris. Paris: Masson et Cie. 1932. Pp. 514. Fr.350.

THE Hôpital Maritime de Berck contains 1500 beds and during the period 1920–30 the authors and their collaborators collected as many as 10,000 cases of bone and joint tubercle, many of which they were able to watch from beginning to end. With this wealth of material on which to draw it is not to be wondered at that they have succeeded in producing a notable work, based upon the lectures which Dr. Sorrell gave to French and foreign surgeons, twice a year, during his eleven years' sojourn at the hospital. Of the four main sections the first is devoted to tuberculous osteitis, which includes spina ventosa of the small bones of the hand and feet, and central abscess; the second deals with tuberculous osteo-arthritis of the upper limb; the third with the lower limb; and the fourth with spinal caries. Having set themselves the ideal of making this an essentially practical book, they do not, when discussing pathological anatomy, describe post-mortem specimens, neither do they discuss whether the lesion starts in the synovial membrane or in the epiphysis. Whichever tissue is primarily affected both very soon become involved, and the question does not affect treatment. Such operative procedures as synovectomy are condemned as irrational and unscientific. The accounts of pathological anatomy, to which a good deal of space is allotted in each chapter, are studies of the progress of the disease from a radiographic point of view. The X ray pictures are abundant, beautifully reproduced, and show typical stages in almost every bone and joint in the body. Two fundamental principles appear to be recognised as guides to treatment: (1) epiphyseal cartilages offer considerable resistance to the spread of the disease, and (2) in the adult as opposed to a child a complete cure can never be anticipated.

As an illustration of the first-named principle the observations on tuberculous disease of the wrist-joint are of interest. The primary focus is said to be almost always a spina ventosa of one or other of the second, third, fourth, or fifth metacarpal bone, but never of the first, because the epiphyseal cartilage is proximal in the latter and distal in the former. Since the centres of ossification of the carpal bone appear irregularly between the ages of 1–6, and are not complete until 12, the cartilages of the carpal bone offer a resistance to the spread of the disease to the radio-carpal joint for a very long time. The disease therefore tends to remain localised to the carpal bone, particularly to the os magnum and unciform whose centres are the first to appear, and as a result 80 per cent. of these cases are cured with the preservation of good movement at the wrist-joint itself. After the age of 12, however, the wrist-joint soon becomes involved, and in order to avoid this, from that age onwards, the authors recommend excision of the carpal bone, which, they claim, gives good functional results. In the ankle-joint they advise operation at an even earlier age. Here the primary focus is in the astragalus, and it tends to spread to the ankle and sub-astragaloid joints. It is useless, they say, to waste time in prolonged conservative treatment, because the best that can be hoped for is a cure with a stiff ankle and a stiff foot. Consequently, as soon as a diagnosis is established and particularly if an abscess forms, they perform an astragalectomy, thus reducing the period of treatment and preserving useful movement at the new ankle-joint. For most of the other big joints they recommend conservative treatment until adult life, except in cases of juxta-epiphyseal abscess, which should always be operated upon early, so as to prevent the spread of the disease into the epiphysis and ultimately into the joint.

Though tuberculous disease is more destructive in the child, and greater deformities are apt to occur, it does, however, tend to get cured with a firm bony ankylosis. In the adult, on the other hand, bony ankylosis never occurs spontaneously, and there is a tendency for cavities to form containing sequestræ and tuberculous granulation tissue. This tissue may remain quiescent for years but may flare up acutely from time to time. Hence in all cases of primary adult tubercle, or the continuation of the disease from childhood into adult life, some operative procedure is recommended; broadly speaking, this usually means an ankylosing operation in the lower limb and excision in the upper limb. It is emphasised, however, that no such operation should ever be undertaken during the early stages of the disease, and that a period of at least six months' conservative treatment should precede it.

The chapter on spinal caries is of particular interest, because it includes a discussion on Potts paraplegia, a subject of which Madame Sorrel-Dejerine has made a special study. Two varieties are recognised; the commonest occurs early in the disease,

reaches its maximum in a few weeks, and gradually, during the course of 18 months to two years, tends to improve under conservative treatment. The second variety appears late, is slowly progressive, and shows a tendency to exacerbations and remissions. The first variety is usually said to be due to compression by an abscess, but the authors prefer to make a distinction between paraplegia with an abscess and that due to an abscess. They maintain that the symptoms are often caused by circulatory disturbances in the cord, secondary to inflammatory reaction, with or without abscess formation, in close vicinity. In this way they explain the commonly observed phenomenon of increased knee-jerks and extensor plantar reflexes, in most cases of dorsal caries without any other compression symptoms. The second type of paraplegia is due either to a tuberculous meningitis, or to a kinking and destruction of the cord by a jagged piece of bone. For neither type do they recommend laminectomy.

It is difficult to speak too highly of this work. Whether or not the reader agrees with the point of view set out is immaterial. What the authors have to say is said remarkably well and is the fruit of long experience. It is said, moreover, in very simple French and within the understanding of those with only a modest knowledge of the language.

Alfred Fripp

By CECIL ROBERTS. London: Hutchison and Co. 1932. Pp. 288. With 14 illustrations. 15s.

THIS biography has been written at the request of his widow and is a personal chronicle of events and not a critical biography of a consulting surgeon. Sir Alfred Fripp revealed himself much in his diaries of which full use has been made, and the book derives its interest from the intimate comments which it contains upon the leaders in social circles of the Edwardian period. Sir Alfred Fripp was instrumental in raising very large sums of money for Guy's Hospital, and throughout his life showed his deep attachment to the foundation where he made his mark as an athletic student and taught assiduously for years, and whence he retired as senior surgeon after thirty years of consecutive service.

Die Nervenkrankheiten des Kindesalters

Second enlarged edition. By Prof. Dr. GEORG PERITZ, Berlin. Leipzig: Fischers Medizin. Buchhandlung. 1932. Pp. 688. Mk.39.50.

No less than twenty years have elapsed since the original edition of this text-book appeared, and it may be imagined to what extent a new edition must have required remodelling and rewriting; the author remarks in his preface that it possesses "ein anderes Gesicht." In its present form the volume embodies not a few matters of recent acquisition, such as the study of the capillaries of the nail-bed in relation to vasomotor neuroses and spasmophilia; acidosis in its bearing on various nervous phenomena and syndromes; new conceptions of hydrocephalus; "pink disease"; and others that need not be specified. The sections dealing with malformations and congenital defects are rather more detailed than is usual in books of the kind, and this is an advantage. Considerable attention is paid to the problem of the nervous child and to neuroses in childhood generally.

While there is abundant evidence of the skill with which recent increments to knowledge have been incorporated, it is surprising to find comparatively little notice taken of varieties of meningitis aside from those associated with tubercle and sepsis, and still less of the encephalitis accompanying many of the exanthems and other fevers of childhood. The articles on cerebral tumour and on epilepsy contain a mixture of old and new conceptions which is not altogether satisfying. Still as a whole this text-book is both compendious and accurate; it is well printed and illustrated, and there are some references to the literature in footnotes to the pages, though many more names are mentioned in the text than are thus particularised.

Handbook of Bacteriology

Third edition. By J. W. BIGGER, M.D., Sc.D. Dub., F.R.C.P.I., D.P.H., Professor of Bacteriology and Preventive Medicine, University of Dublin. London: Baillière, Tindall and Cox. 1932. Pp. 459. 15s.

THIS text-book of medical bacteriology fills a useful place in the student's library. While giving a clear account of the bacteriological knowledge which he should require, Prof. Bigger has kept the size of his book within reasonable bounds. The new edition is only seven pages longer than the second, which appeared three years ago, and does not differ from it materially, most of the alterations being of minor importance. The book should retain its popularity, for, if dogmatic, it is accurate as well as concise.

Intracranial Suppuration

By E. MILES ATKINSON, M.B., B.S. Lond., F.R.C.S. Eng., Surgeon in charge of the Ear and Throat Department, Royal United Hospital, Bath. London: Jonathan Cape. 1932. Pp. 127. 5s.

THE Modern Treatment Series, to which this little book belongs, aims at presenting the generally accepted views on special subjects in a readable and concise form. This volume conforms to such an ideal. It gives a very fair account of intracranial sepsis based upon current medical opinion and on the author's own considerable researches. Mr. Atkinson rightly emphasises the earlier signs of intracranial suppuration, signs which at first may not be at all characteristic, but whose enumeration serves the very important purpose of suggesting to the practitioner that these diseases, rare in his practice, must not be entirely ignored. Short descriptions of operative procedures are also incorporated in this book. For those who wish to study the subject further or require more precise information on technique, excellent bibliographies are appended to each chapter.

Hints to the Young Practitioner

By G. FRANCIS SMITH, M.R.C.S. Eng., L.R.C.P. Lond., Consulting Surgeon, Peace Memorial Hospital, Watford. London: Oxford University Press. 1932. Pp. 156. 5s.

THIS is a wise little book. The chapters form suitable counsel to the young general practitioner. The advice given conforms with universal experience, and this of course makes much of the teaching obvious, but the precepts are so clearly arranged and the information is given in such a sympathetic manner that the author should find his work successful. He deals shrewdly with difficulties arising in the early days of general practice.

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THE LANCET

LONDON: SATURDAY, NOVEMBER 5, 1932

RADIUM THERAPY

YEAR by year the reports from the research centres working with radium lent by the Medical Research Council are summarised in a green book issued by the Council, with appropriate comments from their Radiology Committee. The book in our hands (Special Report Series No. 174) is the tenth to be issued on this subject, and comparison with its predecessors shows that progress has been made on expected lines, though not so smooth and rapid as some had hoped. The first of the ten reports (No. 62) dealt with the initial therapeutic trials made when the whole stock of radium bromide collected for military purposes during the war, afterwards to be distributed between nine centres, was concentrated at the Middlesex Hospital.

The first summary of reports from the centres (No. 90) appeared in 1924, and dealt with work in progress in 1923. It is here recalled because, while disappointment had attended the use of radium in malignant growths of the mouth, jaw, and throat, the conclusion was already reached (p. 31) that in the treatment of cancer of the uterus radium is an agent of unquestionable value, and in cancer of the breast the increasing use of radium, combined with surgery, was already giving good results. It is significant perhaps of the growing complexity of the subject that whereas in 1924 the comments of the Radiology Committee were presented in the form of a conclusion to the summary of the various reports, in 1932 they are presented only as an introduction. But the main lines of radium therapy at the present time are still the treatment of cancer of the breast and the cervix uteri. The buccal cavity, however, is now placed among the more, instead of among the less, hopeful regions, though statistics reveal that the expectation of life of a patient with a primary growth of the tongue which has extended to the glands of the neck is still very low. A comparison between radium and surgery in this region can hardly be made, because present-day therapy consists largely of a combination of surgical and radiological methods; but it can at least be said that the mutilating operation of excision of the tongue has now given place to radium treatment. As to the breast, though the immediate mortality is very low, the results returned in these annual reports give the impression either that the expectation of dealing successfully with the inoperable breast cancer must not be placed too high, or that radiological methods for this site have not yet been fully explored. It is suggested that better results in this region may have to await a hopeful lead from experimentalists in radio-sensitiveness and radio-resistance. If, however, recent views on damage to endothelium as the true basis of the apparent selectivity of radium as used in treatment are confirmed,[1] little practical help can be expected from any attempts at differentiation which ignore this factor. At present most surgeons would go still further, and agree with Mr. B. W. WILLIAMS (see p. 1017) that early growths in regions in which operative treatment gives excellent results should not be subjected to treatment by radium alone unless for any reason operation is contra-indicated. If Mr. WILLIAMS's review of the present position of radium therapy in general seems unduly pessimistic, this impression was dissipated in the minds of those actually present at his lecture by the demonstration of a dozen successes in inoperable cases. His contention that radium treatment is still at a stage of empiricism is confirmed by the variations in technique adopted at different centres. As he says, principles are only emerging painfully and slowly, and all the rules being formulated appear to be subject to confounding exceptions. This is what makes the teaching of radium therapy so difficult, especially in view of the occurrence of occasional distressing complications which may or may not be attributable to radiation. For example, the Cardiff centre reports on 22 cases of fistula formation among the 254 cases of carcinoma of the cervix treated with radium during the last ten years. In none of these cases—all but one advanced and inoperable—did the fistula form immediately after treatment, but the conclusion that this delay precludes the possibility that they were due to it seems hardly justifiable. The University College Hospital report, which was published as a separate book last May, contains interesting notes on some sequelæ of irradiation, including pain and radionecrosis, acute and delayed, and on the effect of irradiation of the eye. Two cases of blindness following treatment were reported, neither being satisfactorily explained. Observations on cases in which radium has been applied close to the eye are being made, and the results will be discussed next year. At this hospital proctitis has been found to be far the most important sequela of irradiation for cervical carcinoma. Mild and transient attacks of proctitis are found to be very common and to be difficult to avoid if treatment is adequately carried out. Severe and lasting cases which make the patient miserable are happily less common; they are attributed to inadequate precautions to protect the rectum when the vagina is plugged. The General Hospital, Birmingham, draw attention to the dangers of the use of radium in unskilled hands in connexion with the radio-necrosis and delayed burning which may follow treatment of cancer of the buccal cavity, while an underdose appears sometimes to stimulate the growth. St. Bartholomew's Hospital, reporting on adenocarcinoma of the rectum, point out that in these growths the margin between a lethal dose and an overdose is small, and that success probably depends on an intensity of

[1] See THE LANCET, 1932, July 23rd, p. 195, and Oct. 15th, p. 860.

radiation which only just avoids a radium "burn." In this connexion it may be noted that an ingenious applicator for use in the rectum, which is illustrated in the report, has been devised by the Scottish Association of the Medical Women's Federation.

If attention is here drawn to the sections of this report detailing possible drawbacks to the use of radium, and to the lack of definite guidance in matters of dosage and technique, it is in order to emphasise the value of a correlating agency such as the Medical Research Council provides. The research centres under the Council now number 12, and the rapid development of radiotherapy is seen from the fact that the relative frequency of surgical and radiological treatment of cases of malignant disease presenting themselves at the ten centres supplying this information is about equal. Only by a critical examination of records and a tireless follow-up system, which takes count of morbidity as well as mortality, can the peculiar contribution of radium to medicine be applied to best advantage.

THE COLONIES IN BRIEF

FROM the time of inauguration of the Colonial Medical Research Committee in 1927, summaries of the reports of the medical departments of the various colonies, protectorates, and dependencies have been prepared for the use of officials. For the first three years the general information as to the health of the different territories was but briefly dealt with, the major part of the publication being devoted to the researches being carried on by officers of the Colonial Medical Service, together with an account of work on allied subjects by investigators of other nationalities. This was done with a view to keeping British workers abroad acquainted with the more recent advances in tropical research in various parts of the world, so that they might not waste time in repeating work already proved and accepted, and so that they might be saved the task of having to read for themselves papers often difficult of access and many of them in a foreign language. The last appearance of this work, printed for private circulation, was in 1930, when the Colonial Medical Research Committee was dissolved. Since then the issue of an annual supplement to the *Tropical Diseases Bulletin*, containing summaries of the full reports of the activities of the health departments, medical and sanitary, of the colonies, has been undertaken by the Bureau of Hygiene and Tropical Diseases, the actual task of preparing the summaries being in the hands of Dr. H. HAROLD SCOTT, the assistant director of the Bureau, who had previously been secretary of the Colonial Medical Research Committee. Two such supplements have now appeared, dealing with the annual reports for 1929 and 1930.[1]

For purposes of gathering together the vast amount of information contained in these annual reports they are dealt with in groups geographically —West African, East African, Mediterranean, Indian Ocean, the Far East, the Pacific Ocean, the West Atlantic, and South Atlantic—and the colonies, protectorates, and dependencies within each group are considered seriatim. The general plan, to facilitate reference and comparison, is to mention in order: vital statistics, maternity and child welfare, school hygiene, and general sanitation; under this last are included water-supply, conservancy measures, town planning, proposals for future work, and the like. Next follow clinical details giving accounts of hospital facilities, out-patient departments, dispensaries, urban and rural, with statistical and medical records of the chief diseases—e.g., malaria, dysentery, enteric, cholera, plague, leprosy, tuberculosis, yaws, venereal diseases, helminthic infestations, and so forth—and the measures for combating them. In each case, where possible, the figures in the returns for the previous year are given as affording an instructive comparison and an indication of progress or of the need for special investigation, study, and preventive measures. Lastly, summaries are given of the laboratory facilities and of the research carried out during the year, completed or in progress.

This collection of summaries is useful in several ways. First, they contain accounts of matters which are scattered through the larger reports, each extending perhaps to more than a hundred pages, but are here brought together so as to make a connected story and more interesting reading by revivifying the dry bones of the official records. Secondly, the vital statistical returns, giving the population as a whole and by race, the numbers of births, deaths, invalidings, and the causes of the latter, will be of undoubted value to actuaries and insurance officials at home and abroad who do a large amount of business in policies of insurance—life, health, and accident—amongst Europeans permanently resident in or temporarily visiting the colonies. Thirdly, they are a fruitful source of information to intending travellers abroad, telling them the commoner causes of ill-health in the districts they may be proposing to visit. Fourthly, they appeal to the research worker in that they refer to the many and varied investigations undertaken in the tropics, stating what is being attempted, what has been accomplished during the year, and the researches proposed for the immediate future. The more important of these, including matters of academic research, receive special individual notice in greater detail in the *Tropical Diseases Bulletin* or the *Bulletin of Hygiene* in the appropriate sections. Lastly—a point of no little significance—the issue of these supplements has already proved an encouragement to those working, often under trying conditions of climate and environment, sensible of loneliness, of the unavailingness of much of their efforts, or, what is even more galling, feeling that their work is not appreciated. For them to know that their official reports are not relegated to oblivion but are scanned, studied, abstracted, and widely published;

[1] Trop. Dis. Bull., Suppl., 1931, xxviii., pp. 68. 2*s*. 6*d*.; ibid., Suppl., 1932, xxix., pp. 148. 2*s*. 6*d*.

to see that others, perhaps thousands of miles away, have been encountering difficulties similar to their own; to note how they have attacked them, and with what measure of success; to discover ideas new to them and try how far analogous measures may be applied in their own districts—these things are of untold worth in bringing men into closer contact, in making them feel their kinship through the touch of nature, and form a powerful incentive to renewed endeavour.

THE HEALTH OF THE MERCANTILE MARINE

FOR some years we have published annually in our columns an analysis of the statistical information regarding the deaths of seamen, issued by the Board of Trade in the Annual Return of Shipping Casualties to, and Deaths on, Vessels Registered in the United Kingdom.[1] It has been our object to call the attention of our readers to the general conditions of health, accommodation, and sanitation amongst the men of the mercantile marine, it being our belief that the care of the merchant seaman in these directions has not been of the same standard as that required amongst the population on shore; that although advances have been made on their behalf progress has been less rapid at sea than on land.[2] A more efficient care of the seaman's health would be secured, we suggested, by a transference of responsibility from the lay Board of Trade to the Ministry of Health. In this proposal we were in agreement with the Royal Sanitary Institute, whose view it was that both the compilation of mortality statistics and the care of the seamen's health should be entrusted to the Ministry of Health, a department especially organised for these duties.[3] Peculiarly welcome, therefore, was the appointment in 1928 of a standing Joint Advisory Committee of the Board of Trade and the Ministry of Health to advise the two departments on questions affecting the health of the mercantile marine. One of the problems to which this committee paid immediate attention was the provision of a statistical measure by which the health of the industry could be assessed, a measure which so far had been lacking except for the very inadequate statistics at the Board of Trade's disposal. The conclusion was reached that, while the preparation of complete morbidity statistics for the industry was probably impracticable, it was highly desirable that a thorough statistical investigation of the mortality of merchant seamen should be undertaken. Arrangements were made with the London School of Hygiene and Tropical Medicine to carry out this investigation on behalf of the Board of Trade, and the results are shown in a report prepared by Major P. GRANVILLE EDGE, of the statistical department of the school.[4]

A very careful attempt has been made in this report to reach accurate figures for the population exposed to risk, and the mortality that should be related to it. As regards the former, it was the opinion of the subcommittee of the Permanent Consultative Committee on Official Statistics[5] that "a very imperfect picture of the mercantile marine would be obtained by a contemplation solely" of the figures obtained in the Board of Trade's annual census of seamen, since this record supplies not the total numbers of seamen, but only those actually in employment on a given date. This subcommittee concluded that the most satisfactory figure would be obtained by taking the figures relating to the occupation resulting from the decennial census of the general population, and adding to these the figures supplied by the Registrar-General of Shipping and Seamen of crews "at sea" on the night of the general census; these two sets of data would provide the total population of seamen. Unfortunately it was impossible in this report to adopt this procedure, since the figures relating to the general census of 1931 were not available. The use of the figures resulting only from the annual census must have the effect of over-stating the mortality ascribed to sea service, since the population relates only to the employed on a certain date, while the deaths refer to the employed and unemployed during the year. To overcome this difficulty, methods of estimating the true population exposed to risk are introduced in the report and discussed at length. As regards the deaths, the numerator of the death-rate fraction, copies of all entries relating to the deaths of seamen, reported during the year covered by the investigation, were specially supplied by the Registrars-General of England and Wales, Scotland, and Northern Ireland. To every death certificate was added special information as to the man's employment, the date when he last went to sea, as obtained from the various official registers and indexes of seamen; if the deceased could not be traced in these registers, a letter of inquiry was addressed to the next-of-kin, informants of death, hospital and other authorities. In the light of this information a considerable proportion—as much as 16 per cent.—of the total deaths was excluded from those submitted to analysis. The excluded cases represented those where the declared occupation of the deceased person at the time of death was that of "seaman," but the man's service had either been confined to fishing vessels, barges, or other craft whose populations would not have been included in the annual census of seamen, or they were men who, for other reasons—e.g., foreigners on foreign ships—were outside the scope of the inquiry. These are among the elaborate precautions that have been taken in the endeavour to reach a true occupational death-rate. In spite of them the results reached can only be regarded as tentative, and it is admitted that this report is unable to provide a definite and final settlement of the problems of the seaman's health. If the 3620 deaths, included in the year's analysis, are related to the population figure obtained at the Board of Trade's annual census, a death-rate of 18·6 per

[1] THE LANCET, 1930, i., 423; 1931, ii., 994.
[2] Ibid., 1929, i., 985. [3] Ibid., 1926, ii., 816.
[4] Statistics Relating to Mortality in the Mercantile Marine. H.M. Stationery Office. 1932. Pp. 98. 1s. 6d.
[5] Statistics Relating to Health and Mortality in the Mercantile Marine. H.M. Stationery Office. 1926.

1000 is reached for all classes (British, Lascars, and foreigners), and 24·8 per 1000 for British seamen alone, the population used relating only to the employed on a given day. Using estimated populations the mortality-rate at ages 20 and over is given as 16·04 per 1000, as compared with 17·61 for males in all England and Wales in 1929; at ages 20–65 it is 9·87 per 1000, compared with 9·70 for all males; but crude rates such as these are, as Major EDGE points out, of limited value as indications of the healthiness of the mercantile marine, for the age distribution of merchant seamen must differ very widely from that of the general population. As an alternative standard of comparison the statistics of the Royal Navy have been utilised, and the following reasonably comparative results have been deduced.

—	Mercantile marine. Population 162,656		127,518	Royal Navy. Population 86,240	
Cause of death.	No. of deaths.	Rate per 1000.	Rate per 1000.	No. of deaths.	Rate per 1000.
Disease ..	295	1·81	2·31	153	1·77
Injury ..	109	0·67	0·85	49	0·57
Drowning ..	205	1·26	1·61	42	0·49
Suicides ..	31	0·19	0·24	9	0·10
All causes ..	642	3·95	5·04	254	2·94

But merchant seamen have not continuous service, and any dying when unemployed are, technically, "retired" and are not shown in the above figures, a point made by Fleet-Surgeon HOME in an article on the Report which appears in this issue (p. 1020).

Two estimated populations, it will be seen, have been used in computing the rates for the mercantile marine. The lower must err in the direction of over-statement of the death-rates, the larger errs in the direction of under-statement. From these rates Major EDGE concludes that "bearing in mind the widely differing conditions of service characterising employment in the Navy and mercantile marine respectively, the higher mortality-rates due to 'All Causes' and to 'Disease' in the latter are not excessive, nor are they higher than might have been anticipated." Further consideration of the *causes* of death in the mercantile marine has been made by means of the method of proportionate mortality—i.e., the proportion of deaths that particular causes contribute to the total mortality. The method has serious drawbacks, but in the absence of accurate population statistics it is probably the best that can be adopted. In this way seamen have been compared with those following shore occupations in which a high standard of physical fitness on the part of the workers employed is demanded—e.g., coal-miners, agricultural labourers, dock labourers. In 1930 for the very first time, the deaths in the merchant service by injury, 316, were fewer than those by disease, 370, and the report generally is a careful and valuable attempt to reach conclusions regarding the peculiar problems of the health of the merchant seamen. It has certainly taken us a step further in solving those problems, and it has shown clearly the intricate technical difficulties involved. It makes no pretensions to be complete; in fact, Major EDGE urges that the whole scope of the inquiry must be widened if dependable conclusions are ever to be reached. The census figures of 1931 will assist in removing some of the conjectures that have at present to be made with regard to the population exposed to risk; data relating to a longer period of time than a single year will place the mortality figures on a more secure basis. Major EDGE says: "So far as can be ascertained, no maritime nation has ever yet engaged in an extended and searching inquiry into the mortality of her merchant seamen. The mercantile marine represents our most important commercial undertaking and, as the leading maritime nation of the world, we should lead the way in this field of work." It is gratifying to find this attitude replacing what we have hitherto regarded as a lack of attention to the important problems of the seaman's health. We trust that this inquiry will be the precursor to the comprehensive investigation that Major EDGE envisages.

NOBEL PRIZEMEN

THE announcement by the Royal Caroline Medico-Surgical Institute in Stockholm that the Nobel Prize for 1932 in medicine and physiology has been awarded jointly to two English physiologists—Sir CHARLES SHERRINGTON and Prof. E. D. ADRIAN—will be received with pleasure and gratification by very many scientists and professional men outside the narrower circle that is thus directly honoured.

Forty years ago SHERRINGTON'S name was already known as that of one who had made his mark by contributions to the physiology of the nervous system, and successive decades have witnessed a rich output of studies that have seemed to delve ever farther into the mysteries of neural action. Highly technical though they have nearly always been—for SHERRINGTON has never assumed the rôle of a popular expositor of physiological complexities, nor cared one iota for the physiology-made-easy of some of his contemporaries—it is a remarkable tribute to his genius and personality that no one has ever wished it otherwise. Those who have sat at his feet, at Oxford and elsewhere, have sought to emulate his level of accomplishment, and have endeavoured to imbue themselves with his spirit of research. His classical work, "The Integrative Action of the Nervous System," published in 1906, takes some reading, and those who have mastered its closing chapter on sensual fusion and binocular flicker, have reason to congratulate themselves on the achievement. That SHERRINGTON has laboured for a lifetime at neurophysiological problems without paying much specific attention to the clinical applications of his discoveries and advances is another remarkable feature of the man; disclaiming all acquaintance with clinical neurology, he has been content to carry the torch of pure science. And yet there is no one to-day of whom

it can be said with greater truth or force that his work is cited and utilised to an ever-increasing extent because of its value as an aid to understanding problems of symptomatology and pathogenesis in nervous disease. His decerebrate rigidity of the laboratory has become a bedside commonplace; his reciprocal innervation has illumined varieties of involuntary movement; his conception of integration has enabled the neurologist to correlate phenomena of disease whose significance otherwise would have remained obscure. SHERRINGTON'S position is indeed unique, seeing that he has laid under indebtedness to himself for insight into clinical difficulties a host of workers whose field of activity does not correspond with his own. It is meet, therefore, that our premier neurophysiologist, ripe in years and knowledge, should receive from abroad that public tribute which does no more than echo what has long been thought of him in this country by all who know him or his work.

Prof. ADRIAN has followed somewhat similar lines of research, and his career has been one alike of fulfilment and of continuing promise. He has specially occupied himself with investigations on sensation and the sensory system, and long since won his spurs by many contributions of enduring merit. He has attracted numbers of younger men to work with him, so that the Cambridge school of neurophysiology bids fair to rival that at the sister university as a centre of the keenest activity in advancing physiological knowledge. Adrian has always shown a lively interest in clinical neurology and had the opportunity of prosecuting clinical research during the war. Thus it comes about that he also has been the maker of studies which have a direct bearing on problems of a clinical kind.

ANNOTATIONS

SOME BACTERIOLOGICAL PROBLEMS

THE Harben lectures which are given each year at the Royal Institute of Public Health do not get the audiences which their quality deserves, and we should have expected that more people would have welcomed the opportunity of hearing such a distinguished bacteriologist and hygienist as Prof. Max Neisser, of Frankfurt, when he came to talk out of his accumulated experience about new light on some of the old problems of his science. His name, at any rate, must be familiar to many thousands of medical students who have attempted, and sometimes achieved, his method of staining the diphtheria bacillus, for it is not only a useful procedure, but one which produces elegant and numerable microscopical preparations. In his first lecture Prof. Neisser dealt with the variation of bacteria and the possibility of the transmutations which have been so often described. We know now, he said, that bacteria are more variable than we used to think, and that the varieties of one species may show quite striking differences; we attach less importance to small aberrations from type, and we are more sure than ever that what may fairly be called a "species" has never been observed to change into another "species." Bacteria have not provided us, as was at one time anticipated, with the spectacle of evolution going on before our eyes, and the history of the claims to have seen it shows that sound bacteriology rests, now and always, on a rigorous technique.

This is the lesson also of the second lecture, in which Prof. Neisser discussed the acid-fast bacilli which resemble the tubercle bacillus. That similar looking, non-pathogenic bacteria were rather widely spread about the world has been known for a long time, but their prevalence and abundance has only recently been realised, and they are evidently more of a trap for the unwary or hasty bacteriologist than has generally been thought. The slime in the orifice of any metal water tap anywhere will show large numbers; they can easily be grown in pure culture and are quite harmless to animals. The nature of the water makes no great difference, and even chlorination does not kill them. Their bodies may obviously be found in any media made with tap water, just as microscopical preparations off gelatin media may show the bacteria which flourished in the putrefying bones of origin. The metal mouthpieces of wind instruments of music are also a favourite haunt of similar (probably the same) microbes, which presumably get there from the mouths of the players, whither they come from water. It is evident that anything looking like the tubercle bacillus which is found in an unlikely place needs thorough cultural and animal tests before its pathogenic character is assumed.

The favourable differential environment provided by metal taps for acid-fast bacilli leads on to the third discourse on the bactericidal effects of silver. These have been known since Naegeli's original systematisation of "oligodynamic" action, in 1893, in which he showed that extremely small concentrations of copper and other metals were poisonous to spirogyra and other lowly life. His supposition that chemical action was impossible and that some new destructive influence had to be invoked has proved unnecessary; it seems clear that a sixpence placed in the middle of an agar plate prevents bacteria growing in its neighbourhood, because traces of silver oxide and carbonate go into solution, and quantitative calculations show that it needs about 20 million silver ions to kill one colon bacillus. At the boundary of the area in which there is a killing or inhibitory concentration of silver, the growth of the organism is enhanced—an elegant illustration of the general rule that poisons, if they are weak enough, stimulate cell growth. This fact qualifies the possibilities of using silver on a large scale for cleaning water-supplies, though the technical difficulties appear to have been surmounted, and the quantities of silver necessary are far less than those which may be safely injected intravenously in man.

CRAFTSMANSHIP WITHOUT SIGHT

THE numbers of men who come under the care of St. Dunstan's have not yet begun to decrease; although there were 31 deaths during the past year, 33 new cases have been admitted, men whose sight has ultimately failed as a result of war service. Their training fits these men to take posts which at first sight would appear to be quite beyond the scope of the blind. Many become joiners, learning to handle their tools with precision, and producing finished articles which compare favourably with the work of

men in possession of their sight. When training is complete St. Dunstan's takes the responsibility of setting up the blind worker in his own workshop, and a technical instructor visits him at intervals to advise on his work and recommend improvements. Blind craftsmen become ingenious at circumventing their disability; one man, having made a standard lamp, and being unable to direct a drill, split the stem of the lamp from end to end, cut a groove to hold the flex, and joined the halves again. A certain number of men take up massage and find that confidence in their skill is quickly acquired by patients; an expert from St. Dunstan's helps the masseur to keep his apparatus in perfect condition, and gains the coöperation of local doctors and hospitals in finding work for him. Other men become switchboard operators employed by large firms with many incoming calls; a specially constructed switchboard is necessary of course. These operators become highly skilled, and several firms have found the work performed more efficiently by a St. Dunstan's man than by an operator in possession of his sight. Poultry farming, boot-repairing, and basket-making are among other forms of work taken up by patients of St. Dunstan's. Those who had received little education before the war are taught English, composition, and grammar, as well as Braille reading and writing. Organised sports hold an important place in training, the men taking up rowing, swimming, shooting at goal, road-walking, and even skating. The patients take part at dances, to the music of a band composed of St. Dunstan's men.

AMBULATORY TREATMENT OF LEG FRACTURES

THE unpadded plaster cast is at present enjoying a period of great popularity among orthopædic surgeons. A traction apparatus for fixation of the leg during the application of a plaster cast for fractures of the tibia and fibula has been designed by Mr. R. Watson Jones, and was recently described by him at a meeting of the British Orthopædic Association.[1] The apparatus can be readily transported, and fixed at will to any firm table; it seems both simple and efficient. The apparatus consists of a thigh support, an L-shaped traction bar, and a clamp by which these two parts can be fixed to the table edge. The thigh lies on its support, with the leg hanging vertically over the end of the table. Traction is maintained by means of a pin driven through the os calcis, and a stirrup which hooks to the horizontal limb of the traction bar. Coarse and fine adjustments allow the correct degree of extension to be applied, and the limb is held firmly in position while it is encased in plaster from the knee to the base of the toes. A sorbot rubber heel is incorporated. Angulation is corrected during the application of the plaster by pressure of the operator's hands. The pin is withdrawn from the os calcis immediately the plaster is firm and the plaster continued to the upper thigh; the patient is allowed to walk from the second or third week. In compound fractures weight-bearing is commenced when the wound is dry. The technique Mr. Watson Jones uses for infected fractures is essentially the closed method of treatment described by Winnett Orr. Recurrent œdema is controlled by support of the leg by a "viscopaste" bandage, without massage.

Objections which have been made to the use of plaster-of-Paris in the immediate treatment of fractures of the lower limb have been based either on lack of faith in the plaster to prevent recoil of the fractured ends within the cast, or on fear of the trophic disturbances that might occur through interference with the circulation, or through blistering of the skin under the plaster. A certain amount of recoil does apparently occur in the method here described when the extension on the stirrup is released; in one case this was sufficient to cause a pressure sore on the dorsum of the foot. No case is, however, recorded in which overlapping of the fragments of the bones subsequently occurred. In fact, this pressure sore on the foot was the only complication met with in over 100 cases treated. A window is now cut in the plaster over the dorsum of the foot to prevent pressure on this area of skin. Swelling of the limb and blistering of the skin Mr. Watson Jones considers to be directly due to lack of support; he argues that the objection on this score to the employment of the skin-tight plaster is fallacious, as the plaster acts as an efficient external splint. He has met with no case of impairment of the circulation sufficient to warrant removal of the plaster. Several reproductions are given of X ray photographs showing the excellent immediate reduction obtained by the method. There seems no doubt in Mr. Watson Jones's mind of the great importance of early weight-bearing. Other surgeons are obtaining good results, both as regards alignment and rapidity of union, by treating the patients in bed.

[1] Jour. Bone Joint Surg., 1932, xiv., 591.

PROTECTION AGAINST POISON GAS

IT is a commonplace to foretell that in any future war determined attempts will be made to intimidate civilian populations by the gas bombardment of cities by aircraft and artillery. The Government of East Prussia, which is entirely surrounded by potential enemies, regard this danger as a very real one, and the Königsberg Association for Scientific Therapy recently held a conference of medical and technical experts[1] which was attended by large numbers of medical men who wanted to prepare themselves to organise the civil population against possible gas bombardment. They learned that the gaseous products of high explosive shell, being lighter than air, are not very dangerous, and that the "blue cross" group —lacrymatory and sneezing gases—are dangerous only when they compel the victim to take off his gas-mask in the presence of deadly vapours. The "green cross" group includes compounds which irritate the lungs, such as chlorine, phosgene, and chlorpicrin; these can be combated by ordinary gas-masks, but if they are inhaled they cause acute œdema of the lungs and air-hunger, with a grave secondary danger of damage to the heart. For this reason artificial respiration is contra-indicated, and the best methods of first aid are venesection and the inhalation of oxygen. The serum lost from the blood should be replaced with saline, and the heart stimulated with strophanthin and glucose. The "yellow cross" or mustard gases, which are composed of dichlorethylsulphide, are by far the deadliest. They are actually fluids, but are atomised by explosion and hang about in thick clouds for a long time, forming a film on solid objects and impregnating clothing. The vapour is almost imperceptible at first, but after an hour or two it exerts a severe caustic effect on the skin and mucous membranes, with consequences that are often disastrous. Apart from its direct effect on the epidermis, eyes, and lungs, it is absorbed by the blood, and causes hæmorrhages in the brain, kidneys, and internal

[1] Deut. med. Woch., Oct. 4th, p. 1629.

organs. It is necessary to protect the whole body against these gases, and those treating victims are handicapped by the necessity of protecting themselves against the residue of the gas on the skin and clothing. It is very dangerous to treat these cases in a confined space or to bring their clothes indoors. If taken in time, mustard gas can be quickly washed off with bleaching-powder solution, soft soap, peroxide of hydrogen, or permanganate of potash, but if left in place it is steadily absorbed.

While it is possible to organise effective protection against all poison gases at present generally known, the efficacy of the measures depends entirely upon the knowledge of the leaders and the discipline of the population for whom they are responsible. Organisation of the civil population in Germany, according to a paper appearing elsewhere,[2] is achieved through three main groups the "Technische Nothilfe," the Red Cross sanitary columns, and the corps of fire engineers. The first of these is used to assist industrial enterprises overcome by fire or flood, and gives practical and theoretical instruction to their personnel. The Red Cross columns number over 3000 and include over a quarter of a million members; they are familiar with poison gas dangers because of the great extent of the chemical industry in Germany. The fire engineers are a highly trained and versatile organisation plentifully supplied with apparatus. A large number of firms manufacture gas masks and are striving to improve their models; advances are being made in the use of changeable filters to protect against different kinds of gas. Notice of the approach of aircraft is said to be closely organised over the whole of the Reich, and every centre of population should in practice receive ample warning. The production of artificial cloud screens, for protection and for warning alike, is being studied. Popular education is carried out by the Deutsche Luftschutz-Liga, which unites the efforts of the technicians and the civil population. Every citizen may be a member for a small yearly subscription. Several periodicals exist dealing exclusively with protection against aero-chemical attack, and last year the Auer Society held an instructive demonstration in Bremen, in which many voluntary bodies took part.

TUBERCULOUS BACILLURIA

THE question as to whether tubercle bacilli can be excreted by a normal kidney is clearly one of practical importance. It was at one time assumed that the appearance of tubercle bacilli in the kidney urine was of similar significance to their demonstration in the sputum in proving disease of the corresponding organ; but the number of cases recorded in which a kidney was removed in which no characteristic tuberculous lesions could be found threw doubt on the theory. It was then argued by some observers that the normal kidney must be permeable to tubercle bacilli circulating in the blood stream, although the experiments of W. Wyssokowitsch, C. v. Klecki, and J. Koch [3 4 5] had shown that the rapid disappearance of injected tubercle bacilli from the circulation which occurs is effected primarily by their lodgment and destruction in the spleen, liver, lungs, and bone-marrow, and not by their excretion by the kidney. Others concluded that the organisms could only pass through a kidney already damaged by chemical or other trauma, and others again that tubercle bacilli could produce non-specific inflammatory changes in the kidney (tuberculous nephritis). It was widely held that removal of such an organ was contra-indicated, although excretion of the organisms might subsequently lead to their attacking the parenchyma of the kidney. The process of excretion without recognisable lesion was known as Ausscheidungstuberculose ("excretion tuberculosis"). F. Lieberthal and T. von Huth [6] have recently reviewed the experimental literature which is principally concerned with the demonstration of tuberculous changes and presence of the organisms in the kidney tissues rather than with their appearance in the urine, and have contributed an experimental study of this latter aspect of the problem. They injected suspensions of tubercle bacilli into the ear vein or left ventricle of female rabbits, giving in some cases intravenous glucose or subcutaneous saline to promote diuresis. The total urine excreted was collected over 24-hour periods, and the animals were killed after a varying number of days. Each urine specimen was examined for tubercle bacilli in the direct smear, and by culturing according to the Loewenstein-Sumyoshi method on Hohn's egg medium. In certain of the animals cantharidin nephrosis, uranium nephritis, and mercurial nephrosis of varying severity was induced before the injection of bacilli was carried out. A careful post-mortem examination of the kidneys was made in each case for tuberculous and non-tuberculous renal damage, and for the presence of organisms. The authors conclude, from the correlation of their own and previous histological and urinary findings, that a physiological excretion of tubercle bacilli by the normal kidney does not occur, nor do they believe in the existence of either the so-called tuberculous nephritis or of true excretion tuberculosis—i.e., organisms being excreted by the kidney then attacking its substance. However, a "false" excretion tuberculosis, in which spread of an interstitial tuberculous lesion through the wall of a tubule or glomerulus, resulting in the appearance of tubercle bacilli in the tubules and subsequent infection by them of other parts of the kidney, may in their view occur (though rarely). In their experiments the production of non-tuberculous renal damage before the injection of tubercle bacilli did not render the kidney permeable to the organisms, but as in P. Baumgarten's [7] experiments with ligation of the ureter, such damage appeared to favour the development of true renal tuberculosis. In common with previous workers, the authors find that the kidney shows a striking immunity to the presence of tubercle bacilli in the blood stream, which they attribute to its copious blood-supply and the large calibre of its vessels and conclude that infection, when it occurs from this route, is due to local disturbance of the circulation or the presence of tubercle bacilli in masses sufficiently large to result in embolism—e.g., when suspended in fat droplets or adherent to debris. The fact remains that when, in opposition to orthodox surgical views in this country, one of two kidneys, both excreting tubercle bacilli, has been removed, the patient's condition has occasionally improved to an astonishing degree. The criterion of infection in certain continental clinics has been the excretion of pus as well as tubercle bacilli, and when pus and tubercle bacilli are excreted from one ureter, and bacilli alone from the other, the former is removed, every effort

[2] Bruxelles Méd., Oct. 16th, p. 1663, and Oct. 23rd, p. 1703.
[3] Ztschr. f. Hyg. u. Infectionskr., 1886, i., 3.
[4] Arch. f. exper. Path. u. Pharm., 1897, xxxix., 173.
[5] Ztschr. f. Hyg. u. Infectionskr., 1908, lxi., 301.
[6] Surg., Gyn., and Obst., October, 1932, p. 440.
[7] Ztschr. f. klin. Med., 1885, x., 24.

being made by heliotherapy and suitable diet to raise the patient's general resistance. Whatever the pathology involved, that success has attended such drastic measures is certain.

DANGEROUS DRUGS AND THE ECONOMIC CRISIS

As foreshadowed in our issue of Sept. 17th (p. 640) the traffic in opium and other dangerous drugs came under review by the Council and the Assembly of the League of Nations at their recent sessions. The report of the Permanent Central Opium Board for the year 1931 was discussed by the Council on Sept. 23rd. It expressed regret that under the stress of economy it had omitted its April session, and thus, to some extent, was precluded from keeping that "continuous watch of international trade" which it was instructed to observe. Attention had been given to the additional work which will fall upon the Board in the event of the Limitation Convention of 1931 receiving ratification and coming into force. Certain gaps in the Convention of 1925 will, it is hoped, be filled up under the provisions of the later treaty. Regret is expressed that many countries have failed to furnish statistics as to dangerous drugs produced, imported, or remaining in stock, or as to the seizures of illicit consignments during 1931; such default in international obligations is regarded as "a matter of grave concern." The Board concludes from the statistics vouchsafed that there has been a continuous decrease in the total world manufacture of morphine, heroin, and cocaine since 1929. It has, however, to be remembered that no returns have been received from Turkey or the Union of Soviet Socialist Republics, which are large producers of some of the drugs in question. The total present world requirements of these drugs for legitimate medical and scientific purposes was, it will be remembered, estimated by the Limitation Conference to be 9 tons of morphine, 2 tons of heroin, and 5½ tons of cocaine. In Great Britain there has been a considerable decrease in the manufacture of morphine and heroin during the last three years, and some increase in the production of cocaine. As regards consumption in Great Britain, morphine appears to be largely replacing that of opium. Seizures of illicit drugs in the case of morphine, heroin, cocaine, and Indian hemp show a diminution in 1931, but the Board reports that these figures afford "no true indication of the extent of the illicit traffic," while the seizures of raw opium "rose from 1279 kilograms in 1930 to no less than 10,166 kilograms in 1931." The conclusion is fully justified that "the quantities of narcotic drugs manufactured are still vastly in excess of those needed for medical and scientific requirements."

The fifth committee of the League also reported to the Council and the Assembly and expressed concern that no more than six States had, up till Oct. 11th, ratified or adhered to the Limitation Convention of 1931, and urged the dilatory States to proceed to immediate ratification. Reference was made to the Bangkok conference and the objection of the Chinese to the Government monopoly system in the Far East. It would appear that the provision of the Hague Opium Convention of 20 years ago, which contemplated the total suppression of opium-smoking, will long remain unrealised. The advisory committee was reported to be making preparation for the projected conference on limitation of the cultivation of the opium poppy and the coca leaf. The Indian delegate reiterated the view that the non-medical use of opium should be deemed legitimate, and a similar plea for the like use of the coca leaf was voiced from Bolivia. The fifth committee concluded with the rather surprising claim that "the opium conventions are more universally applied than any of the other conventions negotiated through the League." Faced with the illicit traffic which is admittedly "still so large," they insist that despite the economic crisis "any faltering might aggravate that very crisis."

UNIVERSITY OF DURHAM: THE NEWCASTLE COLLEGE OF MEDICINE

THAT there is great discontent in the Newcastle College of Medicine has been for some time an open secret, and the move to dispense with the services of Prof. H. J. Hutchens, Heath professor of bacteriology and pathology, in very debatable circumstances, brought some of the questions at issue to the brink of legal proceedings. These were, however, stayed on the understanding that the administration of the College should be submitted to inquiry, and the facts were laid before the Chancellor, Lord Londonderry, in June last. On Oct. 28th the Governors of the College met to consider a letter from the Chancellor, in which he stated that in his opinion an independent inquiry should be instituted, and he asked for the assistance and coöperation of the Council of the College of Medicine in the course which he decided should be taken. A resolution was passed, by 53 votes to 28 against, in favour of an inquiry to deal with the whole field of the administration and constitution of the College, the College defraying the costs.

FILTRABLE VIRUSES AND DISEASE OF THE NERVOUS SYSTEM

POSSIBLY in no field of microbiological research is coöperation between clinician, pathologist, and laboratory investigator more essential than in the case of the filtrable viruses. This is not difficult to understand, for the size of the filtrable viruses is such that direct observation of them is either impossible or of limited assistance only; the changes produced by them in the host's tissues must, of necessity, be our principal source of information. In a recent paper T.M. Rivers[1] lays stress on the interest which this group of viruses has for the neurologist and neuropathologist. Quite apart from such conditions as acute anterior poliomyelitis and epidemic encephalitis, there is the added importance of rabies virus for human pathology as evidenced by recent occurrences in Trinidad and elsewhere,[2] and that important and elusive problem of post-infection encephalitis. This last condition, which incidentally can occur without any preceding infection, appears to be linked up with conditions such as disseminated sclerosis and Schilder's disease, since the histological picture presented by the central nervous system in all these diseases has a common feature—demyelinisation. Thus the elucidation of the ætiology of any of the forms of post-infection encephalitis might conceivably supply the key to the whole group and bring a rapid advance in our knowledge of these conditions. Rivers has no new light to throw on this problem, his object is rather to review the situation and clarify ideas as a prelude to further

[1] Arch. Neurol. and Psych., 1932, xxviii., 757.

[2] Hurst, E. W., and Pawan, J. L.: THE LANCET, 1931, ii., 622; Jour. Path. and Bact., 1932, xxxv., 307.

work. In his remarks on the nature of these viruses he still shows disinclination to accept the view that they are probably micro-organisms; in fact, he issues a warning against the too ready acceptance of presumptive evidence. An open mind is an invaluable asset in research, but in the case of such viruses as vaccinia, fowl-pox, psittacosis, and ectromelia, the recently acquired evidence points strongly to their micro-organismal nature. Any other view of them seems, at present, to require assumptions for which there is no warrant.

THORIUM IN RADIOGRAPHY

THE day when the scope of radiography was limited by the natural opacity of the organs is long since past, and now almost every year sees the discovery of some new method by which another organ may be rendered artificially impervious to the rays. In the last two or three years experimental work has been done in Germany and elsewhere on the use of thorium salts to render the liver and spleen more opaque to X rays. The method by which colloidal thorium renders visible the liver and spleen is shortly as follows. Colloidal thorium, like any colloidal suspension, is rapidly stored in the reticulo-endothelial system of the organism, and as it is not penetrable by X rays will therefore give a shadow of the organs in which it is stored. The mammalian liver and spleen, being very rich in reticulo-endothelial cells are thus outlined in the X ray picture. To the observations already noted in our columns [1] may be added others that have since been published. Fischetti [2] has found it possible to visualise the placentæ of the rabbit and guinea-pig with intravenous injections of Thorotrast (colloidal thorium dioxide). In the rabbit quantities of the salt far in excess of those required to show up the liver and spleen were required, and the animals died soon after their administration. In guinea-pigs the placental image was clearly photographed, the shadow first becoming apparent a quarter of an hour after the injection and being most intense three-quarters of an hour afterwards, then gradually lessening and finally disappearing at the end of 24 hours; all the lobes of the placenta were clearly delineated, and in one photograph the maternal vessels could be seen entering and leaving the organ. The liver and spleen also were rendered opaque to the X rays, but the time relations of these opacities were different, since they did not appear till four hours after the injection and persisted for some days. These differences are explained by the fixation of the opaque colloidal salt Histological examination of the viscera post mortem shows the reticulo-endothelial cells of the liver and spleen to be full of thorium granules. The reticulo-endothelial cells of the placenta, though by no means negligible in number, contain but few granules of thorium, and it thus appears that the placental shadow is largely the result of the great vascularity of the organ and the concentration of the salt in the blood plasma. Other histological findings suggest that the thorium does not pass the placental barrier and does not reach the fœtal tissues, but the results are of no clinical significance at present since they are obtained only at the cost of the animal's life.

R. Gottlieb [3] in Canada has used thorium clinically with success for delineation of the liver and spleen and of the pulmonary arterial tree. The dose necessary is minute compared with those required to produce a placental shadow in animals. Thorotrast was given in doses up to 25 c.cm. to 12 patients, most of whom were suffering from incurable diseases, and in several of whom death was imminent before the injection, and also to two normal persons. There was a complete absence of any immediate untoward effect, and although death occurred in six cases within a few days or weeks, it could not be attributed to the injection. Subsequent observations over a period of eight months have not shown any pathological changes in the organs in which thorium was deposited, in spite of slow elimination.

[1] THE LANCET, Sept. 3rd, p. 530.
[2] Il Morgagni, Oct. 2nd, p. 1268.
[3] Canad. Med. Assoc. Jour., October, 1932, p. 356.

CHLOROFORM CAPSULES

THE offer of the National Birthday Trust to supply chloroform capsules for trial by medical practitioners on women in labour should not be ignored. The public demand for alleviation of the pains of normal labour is growing, and this device is the most promising attempt we have yet had brought to our notice to provide an analgesic suitable for use by the midwife in the absence of the doctor. Doubts have been expressed on the one hand whether the concentration of chloroform might not reach dangerous limits, and on the other whether the quantity (20 minims) supplied in each capsule can do more than act as a placebo. The only way to settle these questions is to make observations on a number of cases under widely differing conditions, and no better means of obtaining information could have been suggested than the enlistment of the coöperation of hospitals and practitioners.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, Nov. 22nd, when the President, Sir Norman Walker, will take the chair and give an address.

AT a meeting of the Pharmaceutical Society of Great Britain, to be held at the Society's house, 17, Bloomsbury-square, London, W.C., at 8.30 P.M., on Tuesday, Nov. 8th, Dr. C. H. Hampshire, secretary of the Pharmacopœia Commission, will speak on the British Pharmacopœia, 1932.

Sir Bernard Mallet, who died on Oct. 28th at the age of 73, was Registrar-General for England and Wales from 1909–20. These were years in which vital statistics became of pressing national interest, and Mallet's grasp of economic theory enabled him to apply his figures to political and social conditions of the time. After his retirement from the Central Statistical Bureau he became president of the Eugenics Society.

Dr. William McLean, who is leaving England this week to become head of the Jerusalem Hospital of the Church Mission to Jews, has accepted the Royal Geographical Society's invitation to join the Mount Everest expedition next spring. He is 33 years of age, and was educated at Repton, King's College, Cambridge, and St. Thomas's Hospital. Before taking up general practice in London he was for some time the resident medical officer of St. Thomas's Home. It will be recalled that the medical member of the Everest expeditions of 1922 and 1924 was Mr. Howard Somervell, F.R.C.S., now surgeon to the London Mission Hospital at Neyyoor, Travancore.

POST-GRADUATE LECTURES

We conclude this week the series of summaries of lectures lately delivered to old students of the London teaching hospitals. Mr. Clifford White spoke at University College Hospital and Dr. Panton at the London. The notes appearing under Mr. Williams's name are based on a demonstration of cases at St. Thomas's, and those of Mr. Gilliatt are taken, with additions, from a lecture at King's.

CHRONIC PELVIC PAIN

(MR. CLIFFORD WHITE)

MANY patients complain of chronic pelvic pain often in the back, in the lumbar region, or in the iliac fossæ; and frequently they find it worse on the left side. Investigation of the case must include a pelvic or rectal examination or both.

In taking the history it is important to find out whether the pain is constant or intermittent, and if it is intermittent whether it is cyclic. If it is cyclic it may precede the period and be due to pelvic congestion; this condition can be treated by giving a saline purge two or three days before the period, or, if very severe, by the use of a glycerin suppository, or even intra-uterine glycerin. Cyclic intermenstrual pain may be due to the ripening of the Graafian follicle. If the surface of the ovary is tough and difficult to rupture, it is easy to see how tension in the follicle may give rise to discomfort, and I believe this is a common cause of dull aching pain half way between the periods. An unduly enlarged follicle, twice or thrice the normal size, will liberate an unusual amount of liquor folliculi on rupture and perhaps a little blood, which will irritate the peritoneum and cause pain.

One of my patients, a virgin of 47, had a dull aching pain in the pelvis beginning in February; in August she had an acute attack of severe pain which prostrated her for a few days. At operation yesterday she had a normal tube, but had been bleeding from an enlarged ruptured Graafian follicle.

Hæmorrhage may also occur into the cavity or the theca interna of a corpus luteum, causing an increase of tension, perhaps with the extravasation of a small amount of blood into the peritoneal cavity, and giving rise to pain. In some cases of the kind the menstrual flow is exacerbated or the onset of the period is delayed. Antuitrin 0·5 to 1·0 c.cm. given intramuscularly twice a week may help the patient.

Intermittent pain may also be caused by urinary constituents, especially oxalates; oxaluria may give rise to irritation of the urethra and vulva, which clears up as soon as the secretion of oxalates ceases.

Chronic pain is more commonly felt on the left side than the right. A small fibroid rarely aches, undergoes degeneration, or becomes tender on palpation; if these signs are present the tumour felt is probably an endometrioma. Varicocele of the broad ligament may cause pain and is comparable with varicocele in the male. It cannot be seen or felt except at laparotomy and with the patient in the Trendelenburg position it empties itself; it is therefore important to look for it with the patient lying flat. Even so, it will not be as obvious as it would be if the patient were upright. Constipation, without other abnormality, may cause chronic left-sided pain; the patient should be given a charcoal biscuit and the time noted until the slatey motion containing charcoal is passed. If the delay is more than 36 hours, fæces may habitually be pouched in the sigmoid, and the patient must be treated for constipation.

When a patient has pain in the lower part of the back there is seldom any abnormality found on palpation. It is important to find out whether the pain followed parturition or trauma, and whether it is worse in the evening and relieved by rest. Pain sometimes follows quite slight trauma such as a difficult labour; or it may be associated with the adoption of a faulty stance. Tilting of the pelvis produces undue strain and backache, and women with long thin backs and prominent vertebræ seem prone to pain. Pain often occurs in women who are run down and anæmic after prolonged lactation. A radiogram of the pelvis and lower lumbar vertebræ should always be taken.

In one case X rays showed that one side of the pubic bone was at least ¼ in. lower than the other and there were two shadows overlapping the pubic joint which the radiologist said were "cysts" of the pubic bone.

The fatigue type of pain is also seen in the patient with increasing fat on the abdominal wall, and is improved by exercise and the reduction of weight. Pain may also be associated with relaxation of the abdomen and enteroptosis. Much can be done for these cases by means of a well-fitting corset lacing from below upwards. The Camp Uplift corset is good and can be obtained in a wide range of sizes; it is more comfortable as well as cheaper than a surgical belt, and the patient is less alarmed if she is told to go to a shop than if told to go to a surgical belt maker.

A patient who has recently had a baby may complain of chronic backache, and on examination will be found to be standing with rounded shoulders and knees and hips slightly bent. Anyone tires who adopts that position. She may say that the pain came on during pregnancy and was then higher up; the reason is that the patient with a pendulous abdomen carrying a baby throws her shoulders back, and produces a static pain at a higher level than that induced by the posture which she adopts following delivery.

Bacillus coli pyelitis may also cause pain during pregnancy. The diagnosis must be established by the examination of a catheter specimen of urine.

Sacro-iliac strain may follow trauma. After the acute lesion subsides the patient may go on well for years until the action of supporting muscles fails; or some slight fault of posture may cause a previously injured joint to become painful. Or there may be chronic strain on the joint due to faulty stance, such as that occurring in the patient who always carries her baby on the same arm. Slight spinal curvature may also cause pain. Radiographic examination gives no help except when osteo-arthritis happens to be present. Retroversion of the uterus is never responsible for *unilateral* pain.

The treatment of sacro-iliac strain, in my opinion, should be by manipulation at the hands of a qualified man who has taken a course in osteopathy. Strapping and surgical corsets are inconvenient and often uncomfortable. Massage and ionisation will give temporary relief. Manipulation will usually give complete relief in about six weeks, but there is a tendency to relapse about a year later if the stance has not been thoroughly corrected and the muscles sufficiently developed.

A few patients will complain that pain is worse in the mornings. These cases are commonly due to fibrositis towards the lower end of the erector spinæ.

Look for and remove any septic focus, and treat by hot air, baking, iodine ionisation, and French tincture of iodine, ℿv., three times a day. Some long-standing cases seem to respond to manipulation.

A diagnosis of neurasthenia is a confession that you cannot find a cause. No single localised pain should ever be diagnosed as neurotic.

THE PRESENT POSITION OF RADIUM THERAPY

(MR. B. W. WILLIAMS)

THE title of this summary has been altered from "Recent Advances" because it is felt that since the recent outbreak of political and journalistic enthusiasm for radium therapy, all the important advances have been in the nature of retreats. So far as I am aware no important discoveries of principle have been made, and radium treatment is still a matter of pure empiricism. As a result the teaching of radium therapy is exceedingly difficult, and experience and luck count more than learning towards success. Principles are only emerging painfully and slowly, and all our rules are subject to confounding exceptions.

The most important principle is probably the fact that the useful therapeutic dose is determined, not by what will sterilise a growth, but by the dose which the normal tissues, stroma, and blood-vessels will stand without massive necrosis. Sloughing on an exposed surface, with attendant infection, pain, and failure to heal, is a result often worse than the original cancer. Even the formation of a residual mass of scar tissue is probably the result of overdose. These residual masses often contain surviving malignant cells, which later give rise to recurrence. The best results leave no palpable mass.

For interstitial use, in needles, the distribution of radium is being standardised at about 0·6 mg. per cm. of active length with a filtration of, or equivalent to, 0·6 mm. of platinum. A needle of this type will produce only a microscopic sleeve of necrosis in normal tissue in a fortnight. Recently there has been a tendency to increase the filtration to 0·8 mm. of platinum, in spite of the protests of the physicists that no material qualitative change results. It is suggested that the improvement observed with the increased filtration is due to two causes. Most workers have subconsciously tended to increase their dose in the hope of getting better results, usually with the opposite effect. The increased filtration firstly produces a quantitative reduction in dose. Secondly, the bigger needle, for psychological reasons, results in fewer needles being used. Together these factors produce a reduction of 20 or 30 per cent. in the total dose. The cost and inconvenience of the bigger needle does not appear to be justified until more positive evidence in its favour is available.

With surface irradiation the tendency now is to prolong the period of exposure without diminishing the intensity during exposure, and it has been found that much can be done in this direction without exceeding the limit set by the tolerance of the normal tissues, by employing repeated comparatively short exposures. At Mount Vernon Hospital good results have been obtained by exposure for four hours a day over a period of three weeks or more, with large plaques containing as much as 1·0 mg. of Ra per square centimetre.

As regards "dosage," it must be confessed that the pursuit of the magic formula which will give the "right dose" is still in progress, but a certain amount of advance can be reported in the general dissatisfaction with such bureaucratic monstrosities as the milligramme hour. The "milligramme hour" as a unit of radiation implies that 1 mg. for 100 hours is equivalent to 100 mg. for one hour in its effect on living tissue. This is obviously absurd. Millicuries and R units are more recent substitutes, but at present the only useful record of a treatment or a method is a simple statement of all the known facts, including an estimate of the amount of tissue treated.

Under present conditions it is inevitable that the effective carrying-out of radium therapy and experiment must be confined to relatively few individuals who have adequate supplies of radium and tim to acquire the necessary experience. It is important therefore to discuss the indications for radium treatment. This can be done most conveniently by giving the groups or types of cases in which, in my opinion, radium treatment is useful or justifiable.

1. Cases, primary or recurrent, which are inoperable, but are still radiable, such as carcinoma of the thyroid and parotid, many cases of malignant disease of the tonsil, nasopharynx, and glands of the neck.
2. Cases in which the operative treatment carries with it a mortality which is so high, or an operation so mutilating as to justify the less well-established methods of radiation, such as carcinoma of the posterior part of tongue and extrinsic growths of the larynx. In this group probably should be included carcinoma of the uterus except in the hands of a few surgeons.
3. Cases in which operative treatment is so unsatisfactory that experiment is justifiable, such as carcinoma of the prostate and œsophagus, sarcoma of bone, and some brain tumours.
4. Advanced or hopeless cases where local success may result in mitigation of pain and suffering, such as malignant brachial neuritis after carcinoma of the breast.

Cases which in my opinion are unsuitable for radium treatment at present are :—

1. Cases of diffuse or generalised metastasis, particularly involving the abdomen, in which treatment is unlikely to mitigate the sufferings of the patient.
2. Cases already suffering from an overdose of radium.
3. Cases in which operative treatment at present gives excellent results, such as early growths of the lip, anterior part of the tongue, colon, rectum, and breast.

As regards the breast, in my opinion, the general use of radium is not at present justifiable in early cases. Experimental radium treatment should be confined to those cases which, though early, are inoperable for other reasons, such as severe pulmonary or cardiac disease, and possibly the considered and intelligent refusal of the patient of operative treatment. Radium therapy in early carcinoma of the breast cannot be justified until a series of at least a hundred cases can show, as compared with a similar series treated by operation : (*a*) A comparable survival rate at five and ten years ; (*b*) no increase in the proportion of cases developing malignant brachial neuritis ; (*c*) absence of painful axillary fibrosis. These remarks are an expression of personal conservatism, and are directed against the indiscriminate use of radium in early operable cases of malignant disease. They certainly are not intended as a criticism of the brilliant experimental work of the pioneers, such as Geoffrey Keynes and Stanford Cade.

The use of radium to supplement or extend the scope of operative treatment appears to be a very promising field for experiment, which is being actively exploited by various workers. It will be some years before any positive conclusions can be drawn as to its value.

Finally, as regards choice of method—operation, radium, or radon in plaque and needle, and X rays—all have their uses in individual cases. They are in no sense at present interchangeable, so can only be employed effectively in places where all methods are available with the assistance of specialist experts.

POINTS IN THE PRACTICE OF GYNÆCOLOGY AND OBSTETRICS

(MR. W. GILLIATT)

IRREGULAR HÆMORRHAGE

IT is important to discover the cause of any irregular hæmorrhage at or about the age of 40. Abdominal and vaginal examination should always be carried out in such cases, and in making a pelvic examination it is useful to place the index-finger in the vagina and the middle finger in the rectum. Doubtful cases should be examined under an anæsthetic, and curettage is often of value in establishing the diagnosis. At 40, pregnancy is not excluded, but is rare; myoma is a common cause of irregular bleeding, but other innocent tumours which may cause this symptom are adenomatous polyps and adenomyomata. Infective causes are chronic endometritis and chronic metritis, but in chronic metritis the loss is not as a rule irregular. A malignant tumour may be responsible, such as carcinoma of the uterine body, the cervix, tube or ovary, or, rarely, of the vagina or vulva. In a large number of cases no causal factor will be found; but not until other causes have been excluded by examination is it justifiable to call the condition menopausal.

The diagnosis of *pregnancy* can now be established early by means of the Aschheim-Zondek test. During pregnancy an anterior pituitary hormone is secreted in the urine; urine containing this hormone produces signs of œstrus when injected into immature female mice, and the test is positive within 14 days of the first missed period. The test is especially useful where pregnancy is complicated by fibroids or where ectopic gestation has occurred.

Carcinoma of the cervix is one of the most fatal conditions in gynæcology, the average duration of life in untreated patients being 20 months. Hypertrophic and ulcerative forms are recognised, and the hypertrophic form may be of the cauliflower or, more rarely, of the mushroom type. The diagnosis of both forms can be made on the friability of the tumour, parts of which break away beneath the examining finger. The condition has to be distinguished from erosion, chancre, ulcer due to a pessary, and ectropion. In doubtful cases an anæsthetic should be given, a portion resected, and microscopical examination carried out. Carcinoma of the cervix is rare in nulliparæ, and has been called the price of child-bearing; it is also more common among women of the poorer classes than among the well-to-do, possibly because women in poor circumstances have less time to spare for the investigation of discharges and because, perhaps, they pay less attention to cleanliness. The condition is commonest at the age of 42, but cases have been recorded at all ages from 22 onwards.

Treatment is either by operation, which is only suitable in early cases, or by radium, which is suitable for all cases. Wertheim's operation, as performed in this country, gives a survival rate of 40 per cent. after five years, but it is a severe operation, and has an operative mortality of 8 to 15 per cent. Radium has not been used on any fixed plan in this country, but workers in Stockholm have found that treatment with radium gives a survival rate of 38 per cent. after five years; any type of carcinoma of the cervix can be treated in this way and it is not a severe undertaking. There is a small operative mortality—perhaps 5 per cent.—due to the occasional development of pelvic peritonitis or to a reaction so marked that further treatment becomes impossible. The results of radium treatment of carcinoma of the body of the uterus are discouraging, but fortunately the results of operation in this condition are good. Radium can also be used to induce an artificial menopause, for example, in chronic metritis.

PUERPERAL SEPSIS

Puerperal sepsis may arise either by endogenous or exogenous infection, but it is a good rule never to blame the patient as the source of infection when one can blame one's self. *Exogenous infection* is commoner, more important, and more deadly than autogenous infection. Puerperal sepsis may arise by transfer of infection from patient to patient, but this is almost a thing of the past. It may have its origin in organisms from the throat or nose of the attendants, and for this reason masks ought to be worn as a routine measure throughout the confinement. The incidence of sepsis also depends to a large extent upon internal manipulations and the duration of labour; prolonged labour exhausts the patient and consequently lowers her resistance by diminishing the bactericidal power of the blood. Lacerations also favour sepsis, and 40 per cent. of cases in which manual removal of the placenta is performed show a rise of temperature afterwards. Induction of labour probably encourages infection more than is imagined, and patients with toxæmia are more liable to develop sepsis than others. Exploration of the uterus in a woman showing slight signs of infection should never be carried out unless there is hæmorrhage, and then only with the gloved finger. If the patient has a raised temperature and an offensive discharge exploration is definitely dangerous. Hæmorrhage in labour is another predisposing cause. It is a condition that practitioners are often called upon to treat, and blood transfusion is one of the most valuable methods of restoring the strength of the patient and enabling her to resist infection.

Autogenous infection may occur in the following ways. Hæmolytic streptococci have been found in the vagina in 2 to 3 per cent., non-hæmolytic in 1 to 2 per cent., and anaerobic streptococci in 1 per cent. of normal healthy pregnant women, who do not necessarily develop sepsis. These organisms get into the vagina possibly in old cases of gonococcal infection, in previous cervical tears associated with cervicitis, and as a result of sexual intercourse late in pregnancy. *B. coli* may invade the pelvic organs from the intestinal or urinary tract. And again, lowered resistance may allow organisms in other places to develop increased virulence, and passing through the blood stream reach the uterine cavity—e.g., severe oral sepsis.

The following remarks refer to cases of puerperal septicæmia only.

Organisms.—In addition to the streptococci mentioned above, puerperal septicæmia may be due to *B. coli* and *Staphylococcus aureus*. The most common of these is the hæmolytic streptococcus and, in addition, it is the most deadly. The staphylococcus is the rarest, but fatal cases have been recorded.

Prognosis.—The only sure guide to the severity of the condition and the patient's chances is the pulse-rate. The mortality increases the higher the rate. Under 100 the outlook is not severe, between 110 and 120 the mortality has been suggested as being 20 per cent., with the pulse-rate 140 the mortality is nearly 50 per cent., and over 150 it is 75 per cent. No other condition—such as the temperature, the number of rigors, the state of the lochial discharge—is in any way as reliable as the pulse-rate in foretelling the progress of the disease.

Treatment.—There is no one treatment which is efficient in puerperal sepsis, but in recent years one striking fact stands out, that patients with this condition do infinitely better in an institution where they can be properly nursed and properly fed, and where treatment (such as it is) can be applied. The different results in patients nursed under these conditions and in their own homes are most noteworthy. Surgical treatment, whether it be hysterectomy, removal or tying of the ovarian veins, only adds one more strain with which the patient has to struggle. The intravenous and intramuscular injection of antiseptics is equally valueless. The least dangerous is flavine, 1 in 1000. Quinine by mouth and intramuscular injection has on the whole been disappointing. Vaccines and sera have not given the results one might expect. There is no doubt that blood transfusion and immuno-transfusion do help the patient and raise her powers of resistance. Irrigation of the uterine cavity has from time immemorial been carried out by antiseptic douches, a procedure fraught with more danger than assistance to the patient. Of late years irrigation of the uterine cavity with sterile glycerin has been used for these patients, and in many cases undoubtedly has borne good results. It requires to be done with care lest a fresh supply of organisms is carried into the uterine cavity during the manipulation.

STAPHYLOCOCCAL INFECTION

(DR. P. N. PANTON)

UNTIL about four years ago, and during the previous decade, staphylococcal infections had ceased to excite particular interest, and some of the known facts concerning them were beginning to be lost sight of. Staphylococci are said to produce an intracellular toxin, as distinct from an extracellular toxin such as that produced by the diphtheria bacillus; but the hæmolytic and leucocidal actions of the staphylococcal toxin have been recognised for many years. Four years ago the Bundaberg catastrophe occurred, in which, owing to contamination of a diphtheria toxin-antitoxin mixture with staphylococci, a number of children lost their lives after inoculation against diphtheria; at the time it was thought to be remarkable that staphylococci should be so lethal.

Staphylococci may be, and often are, carried on the skin of people who show no symptoms themselves, but it is doubtful whether virulent strains are ever carried in this way. The carrier may be responsible for outbreaks of infection in others.

In one case the carrier was a nursemaid who had been suffering from styes. She entered a family where there were two children, one of whom shortly afterwards developed a stye and the other a skin abscess. The maid went away for several months and the children recovered; but when she returned, although she was entirely free from symptoms, there was a fresh outbreak of infection in the children. The conjunctival sac of the nursemaid was found to give cultures of a fairly virulent strain of *Staphylococcus aureus*.

Where children develop staphylococcal infections it is always worth while looking round the household for a carrier.

Once an infection has been incurred, subsequent attacks are common. A carbuncle may be followed by an outbreak of boils in the same patient which may persist for months. Animal experiments throw some light on this susceptibility to fresh infection. An area of a rabbit's skin is shaved and a dose of staphylococcal culture, sufficient to produce a spreading lesion, is injected intradermally. At the same time one-tenth of the dose is injected a short distance away, and one-hundredth and one-thousandth of the dose at other neighbouring sites. One-tenth of the dose will probably produce a small lesion, and one-hundredth and one-thousandth none at all. If the lesions are allowed to heal and the whole process is gone through again several times there comes an occasion, after the third or fourth repetition, when the original dose will produce only a small lesion; one-tenth of the dose will also produce a small lesion, but one-hundredth and one-thousandth of the dose, instead of producing no lesions at all, now give rise to lesions similar to that produced by the full dose. In short, the animal has become partially immunised to the infection, but it has also become susceptible to a much smaller dose. This hypersensitive state is the basis of all recurrent staphylococcal infections. We know of no means to break it—the patient often remains hypersensitive for years. Unfortunately, we can induce it, for example, by overtreatment with vaccines.

If staphylococci are grown on an agar slope for 24 to 48 hours in a partial atmosphere of carbon dioxide, and if the culture, after grinding up the agar, is then filtered, the filtrate is found to be toxic. A fraction of 1 c.cm. injected into the ear-vein of a rabbit causes death almost instantaneously. The toxins which have been isolated have four actions, being lethal, necrosing, hæmolytic, and leucocidal. The lethal toxin is the one responsible for the death of a rabbit when injected in the way described; probably it does not play much part in human pathology. The necrosing toxin has a local action on the skin, and doubtless takes part in the production of local lesions in the human subject. The hæmolysin of staphylococci differs from that produced by hæmolytic streptococci in that it has a very slight effect on human red cells, and only causes lysis of the red cells of certain animals. It is doubtful whether it plays any part in human pathology, but as its content varies with that of the necrosing toxin, and is more easily estimated, it is useful as a measure of the amount of necrosing toxin present. Leucocidin attacks only the phagocytes, throwing them into clumps which are visible to the naked eye. Such tangled masses of phagocytes are probably responsible for pyæmic emboli.

Different strains of staphylococci produce these toxins in varying proportions. Very generally speaking virulent pyæmic cases and cases of carbuncle with spreading infection are due to strains which produce a high content of leucocidin and a low content of hæmolysin. Boils arise from strains with high leucocidin and high hæmolysin, and sycosis from strains with low leucocidin and high hæmolysin. A fourth group of non-pathogenic strains which are largely saprophytic have low leucocidin and low hæmolysin.

This variation in the proportion of the different toxins has a considerable bearing on specific therapy. An autogenous vaccine will have little effect if it is made from a strain with low leucocidin and hæmolysin, whereas a stock vaccine made from a strain with high leucocidin and hæmolysin may work wonders. When a stock vaccine is used it is therefore important to find out what strain of staphylococcus was employed in its preparation. Another method of treatment which deserves trial is immunisation with toxoid. If a small dose of staphylococcal toxin is injected intradermally a wheal will nearly always appear if the patient is adult; children and some young adults may give a negative result, and so will a patient moribund from pyæmia. In other words, sensitive patients react, whereas insensitive or

moribund patients do not. But by adding formalin, or heating the toxin it is possible to make it much less toxic though its immunising properties remain satisfactory. I have tried using toxoid in a few cases of sycosis; the results were not dramatic, but there was considerable improvement in the condition.

Another method of treatment is passive immunisation with antiserum. Until recently no antiserum, made in the light of modern knowledge, was available, but Dr. G. F. Petrie of the Lister Institute, has prepared for us an antiserum by injecting a horse with toxin having a high content of hæmolysin and leucocidin obtained from a strain of staphylococcus causing boils. Again there have been no dramatic results, but in some cases the use of the antiserum seemed to be followed by rapid separation of the slough, healing, and the subsidence of toxic symptoms in cases of carbuncle. In other cases there appears to have been little result; but carbuncles vary so much in the course they take that it is difficult to speak with certainty of the effects of the serum. Some pyæmic cases benefited; some, in which there had been spread of pyæmic abscesses before injection, developed no more abscesses after serum treatment had been begun. In any case, antiserum is the only specific remedy we have at the present time and therefore deserves trial in severe infections. It should be given in 40 c.cm. doses three or four times during the first four days. No further doses should be given after ten days.

Antivirus does not give striking results in my experience. I will not discuss the value of metals such as manganese, since they do not come under the heading of specific therapy. It is important to remember that staphylococcal infections are cut off by a zone of inflammation from the deeper layers of the skin, and if staphylococci are introduced into these deeper layers the patient may die. When incising a boil please be content with an opening that you consider too small rather than run the risk of spreading infection into the deeper tissues. To incise a carbuncle unless to evacuate pus is unjustifiable.

SPECIAL ARTICLES

MORTALITY IN THE MERCANTILE MARINE

By Fleet-Surgeon W. E. Home, O.B.E.

Everyone interested in the health of the British seamen of the mercantile marine will be very grateful to the Board of Trade for initiating the investigation and publishing the statistics which now see the light in this blue-book.[1] In 1924 the Royal Sanitary Institute memorialised the authorities on the need for the issue of an official death-rate for British merchant seamen, as it was felt that the sanitary defects under which merchant seamen suffered in their ships must make their effects visible in the death-rate, increasing deaths in certain directions, and so helping to make improvements more obviously necessary. The Institute wanted a death-rate found yearly for seamen, being convinced that the insanitary conditions they knew of on ships could not but write their mark on any true death-rate; and, given such, the need of improvements would come clearly to notice, when something more would be done than seemed likely so long as there was no accurate knowledge to force it on. They wanted a death-rate for "occupied" seamen, the men on ships, the men with whom the port sanitary authorities were concerned, the men whose deaths were reported in the annual return of the Board of Trade, the men suffering from the sanitary defects of the ships. But when the committee which the Board appointed to examine this question reported, they were found to have decided that a death-rate for "occupied" only was impracticable of attainment, and recommended the search for a death-rate for the "occupied and retired." At that time the securing of this information seemed more visionary than the original objective. The deaths of "occupied" were known, the number at risk on certain census days was also known, and was roughly estimated for the year by the Board of Trade, but as for the "retired" or unoccupied seamen, whose deaths were only known to the local registrars, there was no faintest idea of the total number of their deaths, still less of the total at risk. How could a death-rate be got at?

Now comes along this blue-book, with a careful record and analysis of the facts, and the whole matter is most lucidly cleared up. Thus definitions are given of "seamen," as understood by the Registrar-General in the general Census, and by the Registrar-General of Shipping and Seamen in the Census of Seamen; the difficulty of estimating a total of seamen for any year is discussed, and the extreme uncertainty of securing complete and accurate lists of deaths and numbers of "retired" seamen is explained. Ultimately the deaths of each class in the examination year (ending Sept. 30th, 1929; what a pity not a calendar year!) were collected. They were 642 among the 127,518 "occupied" seamen, and 2524 among a body of "retired" seamen, whose number cannot be stated until the complete figures of the general Census of 1931 are available.

The "occupied" and "retired" of seamen have to one another a relation quite different from that existing in other trades. Generally the "occupied" go on together, as in a river like Niagara, quite smoothly until the break comes, when they plunge into the "retired" pool, whence is no return. But the service of seamen is not continuous, they sign on for a ship and are "occupied," they sign off and cease to be "occupied," returning again to that class when they sign on for another ship. Imagine a terra-cotta water cooler, with a saucer below. Water oozes through its sides, some is evaporated (deaths), some drops into the saucer below (men signing off), and is again returned to the cooler (men signing on for a new ship). The water in the cooler represents the "occupied seamen"; some of them die and do not return, but many come back and with recruits keep up the total of the industry. The important point is that the number unemployed on any day is unknown, their health conditions are unknown, and these indeed often come only to notice when the men die, and are then registered as "retired." Now nothing was known about these deaths until this blue-book appeared, in which is mentioned that in the examination year 2524 deaths of "retired" seamen occurred, of 2022 of whom the time since their last sea service is stated; and 298 died within three months of leaving the sea, a great mortality just when they left. Surely these deaths were due to the active service. For as there were 642 deaths in the active service in the year, there may reasonably

[1] Board of Trade: Statistics Relating to Mortality in the Mercantile Marine. H.M. Stationery Office. 1932. Pp. 98. 1s. 6d.

be supposed to have been 161 deaths in each quarter of the year. Why did the deaths go up to 298, nearly double, among those who had left the service, immediately after they left it? Half the deaths of seamen (active service) were until 1929 due to injuries; from these the retired are free, yet 625 of them died in the year after they left the service; but only 642 of the 127,518 men who remained! Can this mean anything else than that many of those shown on their death certificates as seamen "retired"—death certificates required within a year of their leaving the sea—had left the service through illness; had in fact left the service only to die. Unfortunately we are not told from what diseases these 298 in three months, or 625 in a year, did die. What else but phthisis will explain the great mortality at the younger ages, for of the 298 who died within three months of sea service, 208, more than two-thirds, were under 55. In the last five years the death-rate from phthisis was 0·13 in the Army, 0·18 in the Navy, and rather over 0·18 in the merchant service, but we must not forget there are 280 other deaths from respiratory tuberculosis among the retired merchant seamen unexplained. An appendix to this blue-book showing the causes of the deaths of the 298 men who died within three months of sea service, indeed of all men who died within the year, would illuminate our knowledge of the diseases of the seaman. Until this has been seen, or some better information provided, it will always be felt that the tale of damage to health by service at sea is but incompletely covered by the Return of deaths in the active service among the "occupied seamen," annually published by the Board of Trade.

To me it has always been a puzzle why the deaths in the merchant service, with its lamentable want of sanitation, were so few, compared with those in the Navy, where were so many more advantages, but that is now explained in this Report; not ostentatiously, but the evidence can be found. Here, for the first time ever, we can extract a statement of the deaths occurring during a year among the retired seamen, and are also told something of how long after retirement it is they die. We know the "retired" are older than the "occupied," so we are not surprised about the deaths under heart troubles or cancer; but finding so very many phthisical cases does make one doubt whether they were not picked up in the men's sea time, though the deaths came later. In this report for the first time we learn of the prevalence of phthisis among retired seamen, though this striking fact is not considered when the high mortality from heart disease and cancer is being discussed (p. 42). I believe that the deaths from phthisis are so numerous among the retired, because men leave the merchant service to die of phthisis, and this suspicion is upheld by Table 17 in the Report which shows "Shore Deaths (British) by Age and Length of time since last Sea-Service." It accounts for 2524 deaths, concerning 2022 of which it was known how long after their last sea service they had died, and their ages. Here it appears that of the 2022, 298 (14·8 per cent., a seventh of them) died within three months of their last sea service, and these 298 with 161, making 459 (22·7 per cent., nearly a quarter of the whole) died within six months of their leaving the sea. Can anyone but believe that a considerable number of these 298 + 161 left their ships unwell, and in fact left the sea to die. Of these cases dying early, many had not exactly meant to retire, but dying when not on ships' articles, were described as "seamen, retired." In this table there are 12 who died under 20; they all died within the year. Aged between 20 and 25, 57 died, 39, two-thirds of them, within the year. It is a tremendous pity that, when all the death certificates were available, we were not told of the diseases which killed the 625 (31 per cent.) who died within a year of leaving the sea.

MEDICINE AND THE LAW

Fortune-tellers Fined

Two women were fined 40*s*. each for fortune-telling last week at the Marylebone Police-court, both of them pleading guilty. According to the information given by the police to the magistrate, there was an element of faith-healing in the case. One defendant, a French teacher and interpreter aged 42, was stated to have given "readings" at 5*s*. each, which were well attended. Among those who went to these "readings" was a man who had a son, aged 6½ years, suffering from a tuberculous foot. The man's wife complained to the police that her husband was so deeply impressed with the French teacher's healing powers that he took the boy to her to be cured instead of taking him to a specialist. The police visited this defendant and presumably warned her that her fortune-telling practice was illegal. She thereupon obtained the services of the second defendant, a masseuse, aged 54, to tell fortunes. Evidence was obtained against both defendants and they were arrested with the result already stated. They were charged under Section 4 of the Vagrancy Act of 1824, "an Act for the punishment of idle and disorderly persons and rogues and vagabonds in that part of Great Britain called England." The Act covers a wide range of offences. Section 4 imposes a penalty on "every person pretending or professing to tell fortunes or using any subtle craft, means or device by palmistry or otherwise to deceive and impose upon His Majesty's subjects." The words "palmistry or otherwise" have been construed as implying that the subtle craft must either be palmistry or something of the same kind. Thus a mere conjuring trick is outside the section. It has also been held that the words "or otherwise" are distinct from the previous general words and that they will cover such practices as pretending to hold communication with the spirits of the dead. They may, it seems, include anything of an occult or supernatural character. The magistrate, of course, sentenced the defendants for fortune-telling, not for pretending to heal the child; indeed, there is no evidence that the defendants undertook to cure a tuberculous foot. It is no very serious crime to satisfy the demand of credulous folk who will pay their shillings for the thrill of being told the future. If credulity goes so far as to substitute a fortune-teller's magic for ordinary medical treatment, one need not wonder at the vogue of the unqualified practitioner.

A Coroner's Powers

A legal contemporary comments on the reported decision of the Reading borough coroner to exclude solicitors in future from some of their accustomed activities in his court. He intends to take his depositions and to recall the witness, if necessary, for examination. He protests that he does not desire solicitors to come to his court and waste his time, "still less to throw their weight about." With all due respect to insurance companies, he adds, a coroner is not paid to hold inquiries for their benefit.

The coroner's ancient office gives him wide powers.

Unlike a High Court judge, he does not sit as an umpire to see fair play while plaintiff and defendant or prosecution and defence present their respective cases. There are no parties to the proceedings at an inquest: no preliminary pleadings have narrowed the issue. The inquisition may end in the commitment of somebody to stand his trial in a criminal court; it does not begin, like a prosecution at the assizes, with the indictment of a named person upon a definite charge. Historical origins have developed the coroner as an examining magistrate. He gathers and sifts the statements and suspicions of the neighbourhood. He is unfettered by the strict rules of evidence, for he scarcely knows what may or may not be relevant. He examines the witnesses himself but in common fairness, where the evidence affects particular persons, he will allow them or their representatives to ask their questions too. In spite of a recent instance to the contrary, he usually permits neither counsel nor solicitor to address the jury. It is said, on the authority of Garnett *v.* Ferrand, that he has a discretion to exclude barristers and solicitors from his court or at any rate to prevent their examining or cross-examining a witness. Be that as it may, the conduct of the whole investigation is in his own hands; he is largely a law unto himself; and thus those who have wide experience of attending inquests in many towns and counties sometimes report singular diversities of local practice. It would be a pity if those divergencies should become too conspicuous. Coroners should be able to control the proceedings in their courts without recourse to a general muzzling order.

The Severity of Coroners' Juries

Mr. Justice MacKinnon, charging a grand jury recently at Gloucester, contrasted the attitude of juries in coroners' courts and at assizes. It was, he said, a matter of wonder to him that coroners' juries seemed only too eager to find verdicts of manslaughter against motorists, whereas assize juries were unduly reluctant to convict a motorist on such a charge. He was inclined to ascribe this difference of attitude to the fact that the former class of jurors is conscious that the coroner has no power to award punishment without further trial, whereas at assizes a jury has a feeling of responsibility inasmuch as punishment must follow a verdict of guilty. The case which elicited these observations was one in which an advertising agent had left his motor-car at the side of the road while he went into a shop. There was a slope in the road, the brakes gave way, the car ran down a hill and killed a boy. The coroner's jury found a verdict of manslaughter and in consequence—without, apparently, any commitment by magistrates—the motorist's name appeared in the calendar of persons for trial at Gloucester assize. Taking the judge's hint perhaps that the coroner's jury had taken the case too seriously, the grand jury threw out the bill against the motorist who thus had not to stand his trial after all.

IRELAND

(FROM OUR OWN CORRESPONDENT)

PROPOSED REDUCTION OF SALARIES

THE Cork county council recently invited its several whole-time officials, lay and medical, to consent to a deduction of 10 per cent. from their salaries. The enforced reduction in the salaries of civil servants carried out some months ago has, no doubt, encouraged local authorities to treat their officials with an equal lack of consideration. The salaries of the whole-time medical officers of the County Cork are already as low as can reasonably be expected, and there is no reason why they, more than any other class of the community, should be called on out of their own pockets to contribute to the relief of the rates. There is little doubt that if the whole-time medical officers were to fall into the trap set for them the next attack would be made on the salaries of the part-time medical officers, and the whole fruit of the struggle of the last 30 years for adequate remuneration would be imperilled. Reduction of salaries cannot at the moment be carried out except by consent.

PARIS

(FROM OUR OWN CORRESPONDENT)

NEGLECT OF NOTIFICATION OF INFECTIOUS DISEASES

THE legislative machinery for the notification of infectious diseases in France exists right enough. But its wheels do not always turn. There is article 15 of the law of Nov. 30th, 1892. There is also article 5 of the law of Feb. 15th, 1902. This legislation deals with the conflicting interests of respect for professional secrecy and respect for public health. But such rules are apt to receive cavalier treatment at the hands of the practitioner who is careless and forgetful, or who thinks in terms of the individual (his present patient) rather than in terms of the community (potential patients who may suffer from his neglect to notify). Matters came to a head a short time ago with a formal complaint to the Academy of Medicine by Dr. A. Loir and Dr. Daniel, of le Havre. They stated that for some time past medical practitioners have been sheltering behind professional secrecy in order to avoid notifying their cases of infectious diseases. They added that throughout France certain doctors, and even groups of doctors, betray the same deplorable tendency. Now the Academy of Medicine is a useful forum for complainants for this reason, among others, that its transactions have the ear of an important public. What is said at the Academy of Medicine to-day filters quickly out into the streets, if not to-morrow, then not many days later. And the daily illustrated paper *Excelsior*, whose profusion of pictures and paucity of words have endeared it to a vast public, has taken up the hue and cry in an interview one of its staff has had with Justin Godart, Minister of Public Health. In this interview he draws attention to a point which the defaulting medical practitioner may have overlooked, and which should prove a spur to conscientious notification. It is this, that while the fine for failing to notify a case of infectious disease may be only 5 francs, the payment of this modest sum does not necessarily mean that the matter ends there. For if failure to notify a case of infectious disease is followed by its spread to some other person or persons who bring an action for negligence against the practitioner concerned, the afore-mentioned fine may prove a stepping-stone to damages of a very different value.

TWO CONGRESSES

The forty-first Congress of French Surgery, which took place in Paris early in October, gave its president, Prof. Pierre Duval, an opportunity to voice his views on the educational system which turns out French surgeons. Besides such standard subjects as physiology and anatomy, he would like the future surgeon to have more than a nodding acquaintance with other

subjects. He should, for example, take part in the laboratory work of experimental medicine. The evolution which Prof. Duval would like to see hastened is that from the merely dexterous handicraftsman to the scientist who has taken a doctor's degree in surgery. The subjects on which attention was focused at this congress were the surgery of the heart and neighbouring structures, the surgical treatment of the diseases of the blood—a subject whose very title might have been given a Gilbertian interpretation only a few years ago—and the surgical treatment of chronic, non-tuberculous diseases of the hip.

In his opening address to the twenty-second Congress of French Medicine, Prof. Fernand Bezançon tried to extract some main guiding lines out of the tangle of modern polypharmacy. It is not only that an infinite variety of remedies is now available for one and the same disease; an infinite variety of diseases is treated by one and the same remedy. Protein-shock therapy is dispensed round-handedly to sufferers from boils, urticaria, asthma, and so on; gold is administered to patients with another wide range of diseases, and specificity in treatment has become a confused conception in some quarters. The employment of one and the same drug in a host of different diseases may, however, be defended if proof can be found of the existence of certain features common to all these apparently different ailments. It is probably to interpret Prof. Bezançon truthfully, to credit him with a greater belief in the future of the remedy which acts on the patient's tissues than in that which is supposed to have some specific action on invading cells.

FIRST-AID ON THE HIGHWAYS

During the recent meeting of the board of governors of the League of Red Cross Societies, which brought to Paris Red Cross representatives of 58 different countries, a demonstration was given of air ambulances and first-aid stations on the highways. After visiting Le Bourget airport and inspecting a passenger aeroplane capable of conversion into an air ambulance on short notice, the Red Cross delegates were taken on the Senlis road, where they inspected some of the 2000 first-aid posts which have been established along approximately 8000 kilometres of roads in France by the Union Nationale des Associations de Tourisme, in conjunction with the French Red Cross. Dr. Béhague, president of the Association's committee on first-aid on the roads, gave an account of the functioning of the system which is now working with such marked success in France.

PANEL AND CONTRACT PRACTICE

Omission to Disclose

AT the twenty-ninth conference of the National Association of Insurance Committees, which met recently at Buxton, the president, a Lancashire man, made the significant declaration :—

> "It is admitted on all hands that the insurance medical service has justified itself and that it is incomparably better than any previous service available to the same class of person. It is a lasting tribute to all parties, to the committees, the doctors, and the chemists, who are working together in hearty and harmonious coöperation, that such sound progress has been made."

Some of the resolutions before the conference were of the hardy annual type. The Croydon representative contended once again that complete freedom to change his doctor should be given to insured persons, refusing to admit that frequent change may be due to pique and leads to excessive certification. A London delegate said he could prove from figures in his office that the restrictions on change had reduced the number of claims and the suggestion of free choice was lost. On the other hand an amendment was carried to substitute three months for one month in Clause 7, III., of the first schedule of the Medical Benefit Consolidated Regulations, 1928. This clause deals with the patient who obtains treatment privately from a doctor without declaring the fact that he is an insured person. At the present time he can make a claim either for a refund of the fee paid or for a withdrawal of the doctor's account, but he must claim within a month. A large number of these claims have to be disallowed on the ground that they are "out of time" The doctor is not likely to welcome this suggestion because anything which tends to delay such claims will make it more difficult to decide the facts. A certain number of insured persons claim private treatment and deliberately omit to disclose to the insurance practitioner (not necessarily their own) that they are insured persons. They do this thinking they will obtain better treatment, no waiting about at chemists for medicine. The doctor's medicine is always thought to be better than the chemist's. When treatment is safely over they claim from the insurance committee a refund under the clause. Committees generally act fairly in these cases; they allow or disallow according to the merits of the case, and they rarely inflict a fine although they have the power to do so. The clause gives much trouble in the way of correspondence with committees, looking up records, claims to be sent in for medicine supplied, arguments as to how the doctor was to know or not to know the person was insured, and so on; but it does prevent the doctor coming before the medical service subcommittee on a charge of receiving fees improperly.

A Question of Personal Service

The London Insurance Committee spent much time this week discussing the question of an assistantship and personal service. In this case the practitioner who has a smallish panel in the north of London bought the practice of a retiring practitioner south of the river with a large panel. He went himself to live on the south side, placing an assistant in residence on the north where he arranged himself to visit and attend patients at least four times a week, and more frequently if asked for. The insurance committee refused permission to employ an assistant. The panel committee, after hearing the practitioner, decided that he should be allowed to employ an assistant. The Ministry will presumably be asked to decide. One argument used was that all the insured persons in the northern practice had selected this doctor so that they might have his personal service; to put in an assistant to attend them was not fair to them. The position really is this. A principal is bound by regulations to do his work himself unless prevented by absence from home, illness, or other reasonable cause, when he must provide a deputy; assistants are entitled to deputise for a principal. An insured person therefore cannot protest at being attended in the first instance by the assistant, but he can (if he is so disposed) demand that in future he shall be attended by the principal, and he is, of course, entitled to continuity of treatment.

CORRESPONDENCE

CHLOROFORM CAPSULES IN CHILDBIRTH

To the Editor of THE LANCET

SIR,—In your issue of July 30th mention was made of the fact that a supply of chloroform capsules, as described by Mr. L. C. Rivett, F.R.C.S., in his paper read before the Royal Society of Medicine on June 17th, could be obtained free of charge for experimental purposes by all hospitals for a period of three months upon application to the secretary, National Birthday Trust Fund, Empire House, 175, Piccadilly, London, W.1. I am glad to say that 73 hospitals have availed themselves of the offer, and tests are accordingly being made on a wide scale. The results so far reported have been uniformly satisfactory.

It is now desired by the National Birthday Trust Fund to extend the offer to all medical practitioners for a further two months. Two boxes of 12 capsules will be supplied free to any registered medical practitioner for experimental use in return for full reports, forms for which will be enclosed; and a further supply can be obtained at cost price or free, if required for use in genuinely necessitous cases. It is especially hoped that medical officers of health will make a trial of these capsules.

It is also desired to make clear that within the three months period from the first application, repeat orders from those hospitals which have already received a supply are welcomed. Although the majority of hospitals have applied for considerable quantities and have repeated their orders, a certain number have asked for only one box, scarcely a sufficient quantity for an adequate test.

As already pointed out in your columns the reports, when received, will be submitted for examination and report to a medical committee of which Dr. J. S. Fairbairn, President of the College of Obstetricians and Gynæcologists, is Chairman.

I am, Sir, yours faithfully,

JULIEN CAHN,
Chairman, National Birthday Trust Fund.

Empire House, 175, Piccadilly, W., Oct. 31st, 1932.

SAFE MILK

To the Editor of THE LANCET

SIR,—During the past few weeks letters have appeared in your columns which indicate that doubt still exists as to the safety of Grade A (T.T.) milk, particularly as regards the freedom of this grade of milk from tuberculous infection.

So far as Scottish conditions are concerned, figures are available which show conclusively that raw milk from licensed tuberculin-tested herds is remarkably free from such infection. Three years ago, in a survey of the results of routine tests carried out in three large Scottish cities,[1] I pointed out that while milk from ordinary herds showed a fairly high incidence of infection, an examination of 550 samples of milk from tuberculin-tested herds supplied to Glasgow hospitals failed to reveal a single positive sample. Some doubt existed, however, as to the reliability of the routine test employed in examining these samples, and it appeared desirable that a further comprehensive investigation should be made, using a far more stringent technique. During the past two years such an investigation has been carried out at the Hannah Dairy Research Institute, the milk samples being tested by inoculation into duplicate guinea-pigs, the subsequent post-mortem examination being carried out after a four-week and an eight-week period respectively. Samples of milk were obtained direct from practically every licensed tuberculin-tested herd in Scotland and, in addition, a large number of retailed bottles of Certified and of Grade A (T.T.) milk were bought "over the counter" in the four largest Scottish cities. Altogether 750 samples were examined. *Of this number only one sample proved positive*—a result which is in marked contrast with Dr. Gloyne's findings.[2] Moreover, an immediate investigation of the herd from which this single infected sample was obtained revealed the source of the infection. Briefly, a defective fence had allowed the "free" cattle to mix with neighbouring infected stock, and a subsequent tuberculin test on the "free" herd revealed the presence of six newly infected reactors.

The potential danger to the milk-supply of such casual infection in a tuberculin-tested herd is obviously a matter of great importance, and the Hannah Dairy Research Institute has therefore also undertaken an inquiry into the frequency of infection in Scottish licensed herds. The report of this inquiry (issued as Bulletin No. 2 of the Institute) shows that out of 28,221 tuberculin tests made since 1923 only 428 proved positive, indicating the average number of reactors to be about 1·5 per cent. of the cow population of tuberculin-tested herds. Since it is probable that not more than 1 per cent. of such reactors can be assumed to secrete infected milk, it follows that the actual proportion of reactors in licensed herds which might be considered as actively dangerous, works out at 1 per cent. of 1·5 per cent., or 3 in every 20,000 animals. Moreover, it was shown in the same report that over 90 per cent. of the reactors in such herds had contracted infection from easily avoidable sources so that the risk of dangerous infection in an efficiently run herd would appear to be minute.

The above results indicate that, as far as Scottish conditions are concerned, the risk of tuberculous infection in milk from licensed tuberculin-tested herds—as judged either by direct examination of milk samples for living tubercle bacilli, or by inference from the number of reactors in such herds—is in practice negligible. There remains the risk of infection with other milk-borne diseases: septic sore-throat, diphtheria, scarlet fever, and enteric fever. Obviously it is impossible to give an assurance that *any* type of milk, or indeed any foodstuff, will be free from the risks of such infection since these arise from casual contamination rather than from faulty methods of production. At the same time it seems likely that the more careful methods which must be used in the production and handling of Certified and Grade A (T.T.) milk (as judged by the low bacterial count required for these grades) and the more educated mentality of the workers concerned will limit the risk of infection. That this is true may be shown from the following facts. In the first place it appears that no milk-borne infection has ever been traced to Certified or Grade A (T.T.) milk in any of the four largest Scottish cities although, according to the recent report (for the year, 1931) of the medical officer of health for Glasgow, milk-borne infections have been traced relatively, frequently to ordinary raw milk, and in one instance (200 cases of scarlet fever) to a pasteurised milk supply. In the second place, I

[1] Brit. Med. Jour., 1929, ii., 453.

[2] Tubercle, July and August, 1932.

understand that in the large scale milk-feeding experiment carried out in Lanarkshire schools when 10,000 children were given raw Grade A (T.T.) milk for a period of four months, no cases of milk-borne disease occurred. This fact should give some reassurance to those of your correspondents who have expressed doubt as to the safety of Grade A (T.T.) milk for children of school age.

The whole of the facts stated in this letter apply to Scottish conditions. I do not know how far similar facts hold for English conditions, though Dr. Gloyne's results give some grounds for uneasiness. In this connexion it is possible that the administration of the Milk Designations Order is more efficient in Scotland than in England owing to the fact that while in Scotland it is the rule for each county to have at least one full-time veterinary officer, in England it is the exception. In any event it appears that there is complete justification for the stipulation made in the Education (Scotland) Act, 1930, that free milk supplied to school-children by local education authorities in Scotland should either be "Certified milk, or milk of the next best grade available." The real difficulty, at least so far as the south-west of Scotland is concerned, is the fact that the existing supply of milk from tuberculin-tested herds seriously exceeds the demand. According to the chief veterinary officer for Ayrshire, for instance (report for 1931), only 60 per cent. of the milk of 55 licensed herds in his county reached the market in 1931 as graded milk, the excess of supply over demand averaging about 1600 gallons per day. In addition, he estimates that a further supply of 1200 to 1300 gallons per day could be made available from other tubercle-free herds if the demand were stimulated. In this area alone, therefore, a total of practically 3000 gallons of milk from tubercle-free herds cannot find a market. It is a disaster that progressive milk producers should receive such scant encouragement in their efforts to provide the public with a first-rate product.

In conclusion I desire to emphasise the fact that this letter is not directed against those who advocate the pasteurisation of the bulk of the ordinary milk-supply, a procedure which may well be necessary until the incidence of bovine disease is reduced and the general level of efficiency in the production of milk is raised. My sole object is to show that a very definite safeguard against milk-borne disease is already available in Certified and Grade A (T.T.) milk, that a plentiful supply of the latter could be made available at a reasonable price if the demand were increased (particularly if the Government agreed to give some practical assistance to those desirous of clearing their herds of tuberculosis), and that, so far as any future national policy is concerned, the encouragement of licensed tuberculin-tested herds has the two-fold advantage of providing a safe milk-supply for the public, and of effecting valuable improvement in the health of farm stock.

I am, Sir, yours faithfully,

NORMAN C. WRIGHT.

The Hannah Dairy Research Institute,
Kirkhill, Ayr, Oct. 28th, 1932.

THE POLICY OF SCHOOL-CLOSURE

To the Editor of THE LANCET

SIR,—Once more the anxious question of the advisability of the dispersal of a school when cases of epidemic poliomyelitis appear is raised, and no doubt will continue to be raised until something definite has been settled. This time the Headmaster of Stowe has to bear the brunt of what must have been clear to him as the only course to save the lives and limbs of boys committed to his charge. The meticulous care he took to prevent the spreading of the infection safeguarded the community. Letters appearing in the daily papers make it clear that parents are carrying out his suggestions, and are grateful for getting their boys out of the danger zone.

It is no light matter disbanding a school, and it is only done when there is no other safe course evident to the "men on the spot." From the nature of things, these men are above the average—mediocrities do not get or hold high competitive appointments—and are well-qualified to weigh pros and cons and to decide. The Ministry of Health do not seem to think so, and proceeded to say so by broadcast on Oct. 24th (which was reproduced in the papers of Oct. 25th), obviously—as I shall show—without full knowledge of the facts. To take some of the broadcast points :—

Slight rise :

8 cases during week ending August 20th.
48 cases during week ending Oct. 8th.

A six times increase is not slight.

Singly and widely scattered.

This is wrong. The essence of poliomyelitis is that it appears in two forms, sporadic and epidemic. They are clinically identical but vastly different in effects. The sporadic form does not spread, the epidemic form does and it is deadly. The kindest thing is to assume that this is a clerical error which will be corrected.

Balance of advantage is in favour

of keeping highly susceptible persons within the danger zone. How is the balance arrived at ? Let us have the data, please.

Conducted on hygienic lines.

My reply to this is to cite the table given in A. S. MacNalty's "Epidemic Diseases of the Central Nervous System" and Dr. MacNalty's comment on the figures.

TABLE XVI. *Poliomyelitis—Sanitary Conditions*

—	Dirty.	Fair.	Clean.	No data available.
Patient ..	0·9	4·8	53·5	40·8
House	3·9	14·5	63·6	18·0

These figures relating to the cleanliness of the patient and house approximate closely to similar figures which were obtained for the year 1917—namely, 53·7 and 63·3 per cent. They indicate, as do American statistics, that the disease cannot be regarded as specially associated with uncleanliness of the patient or of the patient's surroundings.

The obvious deduction is that good hygienic surroundings favour poliomyelitis. This was also seen in a spot-map of the Leicester epidemic of 1926. Stoneygate had more cases (proportionally) than Belgrave Gate—the former "west end," the latter a slum.

In the 1926 epidemic Broadstairs schools asked for advice and they were advised to carry on. They did—until parents removed what was left of their children. Other schools, knowing the disastrous results of the carry-on policy, dispersed, with happy results to their school populations. This question of dispersal of schools during epidemics of poliomyelitis is important : it must, and can, be definitely settled by careful investigation of past epidemics. Broadstairs alone affords valuable evidence. Let us have a full report of the Broadstairs epidemic from the Ministry of Health.

The Britisher's innate respect for "authority"

makes headmasters loath to disband when they know it is the only safe course. It is not fair to these men to be acting in opposition to "authority." Until the Ministry of Health can say "We have shown you how to detect carriers of poliomyelitis virus and effectively treat the disease," safety first; dispersal is the best policy.

I am, Sir, yours faithfully,

WILLIAM DUNN,
Medical Officer to Uppingham School.

Oct. 29th, 1932.

A CHRISTMAS APPEAL

To the Editor of THE LANCET

SIR,—May I ask once again for the kind hospitality of your columns on behalf of the Royal Medical Benevolent Fund? We have for several years past given a Christmas gift to all our annuitants and to the poorest of the grantees; and in order to accomplish this we have been compelled to ask for the assistance of our brethren in the medical profession. This is the special object for which I desire to secure your approval and support.

We hope with the help of our sympathisers to allot 30*s.* each to these poor folks. In these hard times old and infirm doctors, widows and children of deceased doctors, are often hard pressed even for the bare necessities of food, clothing, and fuel. Anything that is given to us for this object will be a real boon.

Donations may be sent to the hon. treasurer, Royal Medical Benevolent Fund, 11, Chandos-street, Cavendish-square, London, W.1.

I am, Sir, yours faithfully,

THOS. BARLOW,
President of the Royal Medical Benevolent Fund.

Nov. 1st, 1932.

PHARMACOPŒIAL LINIMENTS

To the Editor of THE LANCET

SIR,—Amongst the preparations in everyday use in dermatological practice, Linimentum Calaminæ has been proved of great value. The name is unfortunate, as most liniments are more liquid, and are generally understood to be applications that are rubbed on. Lotio Calaminæ Oleosa would indicate its uses more accurately. The formula is to be found in the British Pharmaceutical Codex 1923 as follows:

Prepared calamine	45·7
Zinc oxide	34·3
Solution of lime	500·0
Olive oil to	1000·0

In the pharmacopœias of the general hospitals it varies slightly, with olive, sesame, arachis, or almond oil as the oily constituent.

The consistency of all olive oil preparations changes according to the amount of fatty acids in the oil, and therefore the finest quality of oil will give an inferior preparation, which separates badly. It has been found necessary, therefore, to use either an inferior oil of high acid value or to add a small quantity of oleic acid to make a stable product. The Pharmacy Subcommittee for the revision of the B.P.C. therefore proposes the following formula:

Calamine	45·7
Zinc oxide	34·3
Oleic acid	5·0
Wool fat	10·0
Liquid paraffin	485·0
Solution of calcium hydroxide ..	500·0

This gives a uniformly good preparation which does not thicken appreciably on keeping and is therapeutically and pharmaceutically sound. It retains all the cooling, evaporating, and soothing properties without the disadvantages above-named. It has been tried clinically through the courtesy of Dr. A. M. H. Gray, at University College Hospital and at the Hospital for Sick Children, Great Ormond-street, for over six months. I am permitted to state that clinically the new preparation is not inferior in any way to the old one and possesses the advantage, both for private and hospital practice, of better keeping properties.

Linimentum Ammoniæ B.P. 1914, after keeping for a short while, has either separated into two layers, or become so thick that it is almost impossible to remove it from the bottle. It has been omitted from the B.P. 1932, and will therefore become a B.P.C. preparation, by arrangement with the Pharmacopœia Commission. Its efficacy depends on the ammonia content and the friction with which it is applied, and not on the oil. The B.P.C. Revision Committee proposes to improve the formula as follows:

Dilute solution of ammonia	250
Oleic acid	25
Liquid paraffin	725

Mix the oleic acid with the liquid paraffin, add the dilute solution of ammonia, and shake.

This preparation does not thicken or separate, and yields a reliable and satisfactory liniment.

Early publicity and criticism of changes in official formulæ are desirable, and it is with this object that I ask the courtesy of your columns.

I am, Sir, yours faithfully,

J. WICLIFFE PECK.

Hospital for Sick Children, Great Ormond-street, W.C., Oct. 17th, 1932.

INDICATIONS FOR AND AGAINST CÆSAREAN SECTION

To the Editor of THE LANCET

SIR,—In your report of this discussion (p. 944) an observation I made is incorrectly reported, and my own observation itself is inaccurate. I beg leave to correct the double error. The report should have read that an analysis of the deaths in eclampsia in Great Britain (excluding Ireland) showed that out of 45 maternal deaths, 17 women died undelivered—i.e., 37 per cent.

I am, Sir, yours faithfully,

EVERARD WILLIAMS.

Wimpole-street, W., Oct. 28th, 1932.

TROPICAL ULCER AS A DEFICIENCY DISEASE

To the Editor of THE LANCET

SIR,—In your issue of Oct. 22nd (p. 889) Dr. L. J. A. Loewenthal tells us that the great majority of tropical phagedænic ulcers healed rapidly when daily intravenous injections of calcium chloride were given. Many years ago I published a note [1] on the value of calcium iodide in the treatment of ulcers of the legs, especially those of a chronic nature. At that time I received a number of letters from abroad including some from the tropics in which it was stated that calcium iodide had proved of value in such cases. I drew attention to the fact that these ulcers occurred in people whose food contained too little lime. This point was re-emphasised in my book "The Heart and Spleen in Health and Disease."

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS.

Swansea, Oct. 28th, 1932.

[1] Brit. Med. Jour., 1906, ii.

THE ACTIVATION OF INSULIN

To the Editor of THE LANCET

SIR,—I have read Dr. Himsworth's stimulating article in your last issue (p. 935) with great interest and I agree that the best explanation of the relative inefficacy of insulin in some cases is the absence of some insulin activator—called by him insulin-kinase. Studies of an insulin-resistant diabetic some years ago [1] led me to suggest in this case the absence of a necessary "insulin co-enzyme." Dr. Himsworth's suggestion that the liver is at fault in such conditions is interesting, but in my experience not supported by clinical facts, although I have been on the outlook for such a possibility. I shall look forward with great interest to the publication of the experimental facts on which he bases his hypothesis.

I am, Sir, yours faithfully,

Harley-street, W., Oct. 29th, 1932. R. D. LAWRENCE.

CITRATED BLOOD FOR INJECTION

To the Editor of THE LANCET

SIR,—My friend, Dr. R. C. Lightwood, has called attention to the fact that in my paper on Hæmorrhagic Disease of the New-born (THE LANCET, Oct. 22nd, p. 887) I did not give any reason for recommending that blood injected intramuscularly or subcutaneously should be citrated. Theoretically it would seem unwise to alter in any way the chemical composition of blood before injection; but in actual practice there is no evidence that citration of blood lessens its efficacy in controlling hæmorrhage, whilst most workers will admit that this simple precaution against clotting of the blood in syringe and needle ensures that the injection of an adequate volume of blood may be made with ease and without undue haste. I had no other reason for my recommendation.

I am, Sir, yours faithfully,

Liverpool, Oct. 29th, 1932. NORMAN B. CAPON.

[1] Quart. Jour. Med., 1928, xxi., 359.

CEREBELLAR SYNDROME IN MIGRAINE

To the Editor of THE LANCET

SIR,—The symptoms Dr. William Phillips mentions (last week, p. 941) are somewhat rare, but sufferers from migraine are very diverse and suffer from a multitude of different syndromes—cerebral, ocular, non-ocular, abdominal, &c., and much has been written on the subject. I was, however, surprised that no mention was made of any administration of arsenic or luminal in this case, for the latter especially is excellent in migraine; given if possible before an impending attack, for if given during an attack it is not absorbed, owing to spasm of the pylorus.

I am, Sir, yours faithfully,

Cambridge, Oct. 31st, 1932. H. WESTGARTH TAYLOR.

CORRIGENDUM.—In the letter by Mr. H. M. Woodcock, D.Sc., on Proteolytic Ferment in Amœbic Dysentery (last week, p. 972), the last sentence in the first paragraph should read: In the malarial parasites, for instance, the residual product of digestion, the pigment, is formed only in the cytoplasm of the parasite, never in the more or less used-up red corpuscle.

PUBLIC HEALTH SERVICES

Muddle-headed Economy

ANTICIPATING curtailment of educational activities to be recommended by the Government's Committee on Local Expenditure, a recent issue of *Education* animadverts upon the working of the school medical service, which, it is alleged, could be made equally effective at less than the present cost. The blame for this state of affairs is placed, not upon the local education committees on whom ultimately responsibility must fall, but upon the professional administrators of the service. There are vague phrases about loose organisation and "professional unapproachableness," but no evidence is produced for the statements, or rather the insinuations, made. It is remarkable that the official organ of the Association of Education Committees should be so ready to expose what it thinks to be the weakness of a service for which its constituent bodies are directly responsible, and when the relatively small cost of the service is considered, the criticism manifests some lack of a sense of proportion. It might more fitly have been directed against those laggard authorities who, by their inadequate staffing and equipment of the service, continue to hinder its efficiency. Of the success of the service in the more progressive areas in producing results there can be no question, and the suggestion of professional incapacity in its organisation is unjustified by facts. Efficiency in the child welfare and school medical services is a premium paid for the health of the nation; any reduction in that efficiency would lead to a return to conditions of former years. The suggestion that reduction of costs would not curtail efficiency shows ignorance of the workings of a service which is an integral part of the general educational system. It is impossible to believe that the article reflects a general feeling among education committees or their chief officials. If it does, it can only be hoped that the control of the school medical service in England will, as in Scotland, be transferred from education committees, and become part of the general health service of the country—as indeed in its activities and purposes it essentially is.

Endocrine Disturbances in School-children

Dr. H. J. Phillips, assistant school medical officer for the county of Kent, has kept a record of all the children during the year who showed endocrine disturbances. Visible enlargement of the thyroid gland was noted in 74 cases—20 boys and 54 girls—the highest figure being in the 13 age-group. Four of the cases showed hyperactivity and, in addition, six children had clinical signs of hyperthyroidism without visible enlargement of the gland. None of these 10 cases had any obvious septic focus; all of them were at or about the age of puberty, a time of mental strain. Dr. Phillips would diagnose hyperthyroidism, whether the thyroid is enlarged or not, in a spare boy or girl, at about the age of puberty, who has tachycardia, fine tremors of the upper limbs, and a tendency to general over-action. The question of treatment is difficult. Experience has shown that in a large number of these cases the symptoms subside without treatment, but the majority pass from the observation of the school service with symptoms still present. Whether they are potential cases of Graves's disease can only

be established by careful following-up. Dr. Phillips does not mention that those who have to deal with senior students and teachers find a considerable proportion of hyperthyroidism among those who have to be invalided owing to nervous breakdown. Experienced examiners in fact hesitate to admit candidates who show even slight signs of this condition. Twelve of the children with enlargement of the thyroid gland showed symptoms of the opposite type; though none would have been called a cretin, they had in varying degree the malar blush, the heavy folds between nose and cheek, large tongue, supraclavicular pads of fat, and mental hebetude. None of these children had had any adequate treatment. The majority of the goitrous children showed no sign of either plus or minus thyroid activity, and this might appear to justify a laissez-faire attitude, were it not that simple goitres of months' or of years' standing may quite suddenly become hyperactive and develop into Graves's disease. "I am of opinion," Dr. Phillips writes, "that where treatment can be tried and adequately controlled, there is no justification for withholding it." He advises that every case should be carefully watched, the only sure guide to the functioning of the gland being the estimation of the basal metabolic rate. Such control might readily be available in school clinics, and Dr. Phillips regrets that facilities are not afforded.

Of disturbances of pituitary function there was one case of mild acromegaly, one of infantilism, and 49 cases of Fröhlich's syndrome in varying degree, especially the characteristic deposit of fat, the undeveloped external genitals in the males, and the mental somnolence. Dr. Phillips was struck by this rather large number of such cases found in his area. "Whether the actual incidence is greater in north-west Kent than in the rest of the country," he says, "I have no figures to show, but it is interesting to note that the great classical example of Brissaud's infantilism—viz., the fat boy in 'Pickwick Papers'—was created by the great novelist who wrote so many books based on the very area from which my cases have been drawn." The parents had not secured treatment for any of them, but Dr. Phillips, watching some of the worst over a period of years, noted that the symptoms definitely increased. He would try in every case the effect of compound pituitary gland and diet, plus thyroid extract where indicated; he can cite some striking successes such as that of a boy of 14 with double girdle obesity, infantile genitals, undescended testicles, beginning to get lethargic and dull at school, who after three months' out-patient treatment lost 14 lb. of weight, while the headmaster reported great improvement in his work. Cases like this are a source of satisfaction to all concerned; they offer a good field for coöperation between school medical officer and private practitioner.

The Swindon Maternity Scheme

Last year Dr. D. Brewer completed a scheme for making maternity safe in the borough of Swindon and neighbouring parts of Wiltshire. The new maternity home, claimed to be the last word in efficiency, was opened during the year, two principles, known as the New South Wales convention, being accepted in connexion with it. First, that deaths in childbearing are to be considered due to the reproductive process, unless it is proved to the contrary; secondly, that the temperature of the puerperal woman is to be recorded four-hourly during the first ten days in order that the onset of sepsis may be detected within four hours. Dr. Brewer believes that this system of temperature recording, which has the effect of trebling the cases of puerperal pyrexia, will throw material light upon the occurrence of outbreaks of pyrexia, which are frequent in maternity hospitals and other institutions. The working of the home up to now suggests that about half the confinements in the borough will eventually take place there. The home is a recognised training school for midwives, and has an extern department which attended 161 deliveries and 8 miscarriages in 1931, the total number of births being 910. There were two deaths in the town in connexion with reproduction; one was from embolism, and the one death which occurred in the home—the only preventable maternal death of the year—would not have occurred had the woman received the attention which she could have had under the scheme. She was admitted moribund from antepartum hæmorrhage. Natal (including postnatal) clinics under the scheme are of three kinds: those held by the matron and the staff of midwives; those held by the woman medical officer who is inspector of midwives; and those held by the consulting obstetrician. For each patient attending the antenatal department a card is filled in, which is transferable from one clinic to another, and is available for cases delivered in the home or in the extern department, and also for domiciliary cases attended by medical practitioners or midwives. The corporation appoints a rota of practitioners to act as obstetricians to the home on behalf of cases other than those booked by practitioners. The rota consists of two private practitioners and one practitioner, with a deputy, appointed by the G.W.R. Medical Fund Society. The services of the consultant and of an anæsthetist are available for every case. Patients booking for the home as doctors' cases pay their own medical fees. Others are considered as midwives' cases, and admitted at fees varying with their income, but the corporation undertakes to pay all medical fees incurred when the midwife sends for medical assistance. The rules appear to provide for every possible contingency. Scrupulous care is taken to see that only clean cases are admitted to the ordinary wards and labour room, a separate department with its own labour ward being kept for doubtful cases. Cases of puerperal sepsis are referred to the isolation hospital, and sufferers from venereal disease are admitted to the county council's V.D. hospital. Of the 259 cases delivered in the home, instrumental assistance was given in 46—a forceps rate of 18 per cent. There were two induced abortions, one Cæsarean section, six cases of placenta prævia, four of eclampsia, and one of mania. With the exception of the case of placenta prævia (already mentioned) admitted moribund, every case was treated to a successful issue in the home, except for two cases of pyrexia which were removed to the isolation hospital, where they recovered. The scheme has won the appreciation and coöperation of the parturient mothers.

Official Advice on Nutrition

The Advisory Committee on Nutrition after a review of recent research work on this subject has advised the Minister of Health:

(1) Having regard to the cogency of the evidence that nutritional anæmia of infants can be greatly reduced by the administration of iron ammonium citrate, it would be proper for the Ministry to give practical advice on the matter to the medical officers of authorities responsible for the feeding of infants.

(2) The experimental evidence supporting the conclusion that rickets and dental disease can be mitigated or prevented by an adequate supply of vitamin D and calcium-rich foods, such as milk, eggs, cod-liver oil, in the diets of infants and children and of expectant and nursing mothers, is so cogent that it would be proper for the department concerned to call the attention of local authorities to the results obtained in Sheffield, in Birmingham, and elsewhere, and to state that, in the view of the department, these results should be applied.

(3) The Ministry should continue to emphasise the paramount importance of milk in the dietary of growing children.

Circular 1290, dated Oct. 27th, 1932 (H.M. Stat. Office, 2*d.*), implements these recommendations in crisp injunctions to county (borough) councils and other maternity and child welfare authorities. The following is a summary of the circular as given in an appendix.

SUMMARY OF CONTENTS OF CIRCULAR 1290

I. *Nutritional Anæmia in Infancy*

Nutritional anæmia is prevalent among infants, and is due to a deficiency of available iron. It is often present only in a mild degree. In its more severe forms it is found frequently in infants who were under weight at birth. Twins and prematurely born babies are especially liable to be affected.

Its chief feature is an abnormal liability to intercurrent infections, particularly colds, otorrhœa, bronchitis, and enteritis, and a tendency for infections to become chronic.

Nutritional anæmia can be prevented and cured by the administration of iron ammonium citrate to infants, or the feeding of infants with milk to which iron in an appropriate form has been added. Dried milk preparations containing added iron are already on the market.

II. *Rickets and Dental Disease*

Severe rickets is rapidly disappearing in this country generally, but in some areas the milder form of the disease is still widely prevalent among infants and young children. Faulty dentition is widespread.

Both for the prevention and cure of rickets and to ensure a proper development of the teeth, the diet of pregnant and nursing mothers and of infants and young children should contain a sufficient supply of calcium, phosphates, and vitamin D. Of these, vitamin D is the most likely to be deficient.

The main foods containing vitamin D are fat fish, fish livers, egg yolk, milk, and butter. In cases where, for financial reasons, the purchase of eggs and butter and of adequate supplies of milk is not possible, the value of fat fish, such as herrings, sprats, and mackerel, should be borne in mind. Where margarine is the chief source of fat in a diet, those brands which contain added vitamins A and D should if possible be secured. Vitamin D may also be provided by the regular administration of cod-liver oil.

III. *Milk*

Milk is an almost perfect food. It is rich in calcium and phosphorus; it supplies protein of high biological value which is of great importance in building up a sound physique and good constitution; it provides the infection-resisting and calcifying vitamins A and D, the latter mainly in summer, and it has other nutritive and protective qualities which render it particularly valuable as a food.

The consumption of milk in this country is far below what is desirable, and every opportunity should be taken to draw attention to the merits of milk as food, especially as an article of diet for children.

Typhoid in Yorkshire

In two ridings of Yorkshire epidemics of typhoid fever have occurred during the last few weeks. In the North Riding several cases were reported around Malton in the second week of October, and during the week ended Oct. 29th (Dr. H. Mason tells us) 78 cases were notified in this urban district. In the West Riding the little village of Denby Dale, near Huddersfield, was involved with a total up to Oct. 31st of 71 cases with 6 deaths. We are indebted to Dr. T. N. V. Potts, county medical officer, for an account of the origin and nature of this outbreak.

In every case, Dr. Potts writes, the infecting agent was found to be the *Bacillus typhosus*, and there appears to be little doubt about the original source of infection. A young woman, aged 21, returned from holiday in Scarborough towards the end of August. Her home is one of a group of houses situated on the hillside (Quaker Bottom) 500 yards or so above the Square Wood reservoir which supplies the village of Denby Dale, further down the valley. This woman was notified as suffering from typhoid fever on Sept. 17th, and between Oct. 8th and 20th 50 other cases occurred in the village.

Owing to the proximity to the reservoir of the house occupied by the original case, the local medical officer of health, Dr. J. T. Bleasdell, immediately became suspicious of a contaminated water-supply being the medium of infection and, along with the surveyor, he carried out a careful survey of the gathering ground. The Square Wood reservoir was constructed about 40 years ago and has a capacity of approximately two and a half million gallons. It draws its supply of water from eight or nine springs situated in a semi-circular gathering ground, half a mile or so in diameter, immediately surrounding the reservoir, the springs being connected up with the latter by sundry underground pipe lines. There is another spring, the water from which flows down by the side of the reservoir, the resultant stream being known as the Munchliffe Dyke; and it appears that many years ago, upon the introduction of the water-carriage system into the group of houses referred to above, the sewage from these dwellings was connected up by drains with the Munchliffe Dyke. Following upon a careful examination of the sides of the dyke by the surveyor an opening into an old rubble drain was discovered, and after tracing this drain to the other end it was found to be communicating directly with the main spring supplying the reservoir, the contaminated water of the dyke being actually seen to be entering the communicating channel. The most likely explanation of the presence of this rubble drain is that the supply of water from the remaining springs was found to be occasionally inadequate, and for the purpose of augmenting the supply the Munchliffe Dyke was drawn upon. No doubt the existence of this channel between the Munchliffe Dyke and the nearby spring was not known to the persons who were responsible for connecting up water-closets and slop-closets to the dyke when the conversion of the houses to the water-carriage system took place. It does appear, however, that the inhabitants of Denby Dale village, numbering some 1400 persons, will have been drinking contaminated water for many years, and had it not been for the advent of the typhoid patient to the houses in Quaker Bottom, situated above the reservoir, it is likely that this tainted water would have continued to be consumed indefinitely.

The supposed infecting case was removed to hospital on Sept. 19th and the supply of water from the Square Wood reservoir was turned off on Oct. 13th. It has been noted that the great bulk of the cases were notified between Oct. 8th and 20th. The period of maximum infectivity of the water would be during the few days prior to the original patient going to hospital, although the risk of infection would continue until Oct. 13th, when the water from the reservoir was cut off. The foregoing sequence of events is consistent with the suggestion that the Scarborough case was the original source of infection. It was fortunate that the surveyor was able to connect up an alternative supply from the Rusby Wood reservoir. The latter is owned by the urban district council and

is used for supplying a number of nearby parishes. No difficulty was experienced in finding the necessary hospital accommodation, and the cases have been sent to the infectious diseases hospitals at Penistone, Meltham, Kirkburton, and Huddersfield. The danger of further infection has disappeared with the cutting off of the infected water-supply, and only by disregard of ordinary preventive measures will any further risk be encountered. The department of the county medical officer at Wakefield has been busily engaged in coöperation with the local medical officer of health. Anti-typhoid vaccine has been supplied by the county department, and the necessary Widal reactions and water examinations have been made in the county laboratory.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED OCT. 22ND, 1932

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 33 (last week, 12); scarlet fever, 2265; diphtheria, 1031; enteric fever, 79; acute pneumonia (primary or influenzal), 848; puerperal fever, 37; puerperal pyrexia, 103; cerebro-spinal fever, 19; acute poliomyelitis, 26; acute polio-encephalitis, 1; encephalitis lethargica, 7; dysentery, 8; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

Of the cases of small-pox, 24 were reported from the county of London, distributed among the metropolitan boroughs: Bethnal Green, Islington, and Southwark each 1; Stepney 2, Hackney 3, Poplar 16.

The number of cases in the Infectious Hospitals of the London County Council on Oct. 25th–26th was as follows:—Small-pox, 65 under treatment, 4 under observation (last week 49 and 0 respectively); scarlet fever, 1926; diphtheria, 1720; enteric fever, 19; measles, 228; whooping-cough, 327; puerperal fever, 24 (plus 10 babies); encephalitis lethargica, 231; poliomyelitis, 6; "other diseases," 161. At St. Margaret's Hospital there were 15 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In 117 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 5 (0) from measles, 6 (1) from scarlet fever, 11 (2) from whooping-cough, 21 (3) from diphtheria, 70 (22) from diarrhœa and enteritis under two years, and 50 (7) from influenza. The figures in parentheses are those for London itself.

Birkenhead and Liverpool each reported a fatal case of enteric fever. Diarrhœa was credited with 10 deaths at Liverpool, 4 each at Leeds, Manchester, and Birmingham. Liverpool reported 4 deaths from diphtheria.

The number of stillbirths notified during the week was 249 (corresponding to a rate of 39 per 1000 births), including 26 in London.

OBITUARY

ANDREW FREELAND FERGUS, M.D., F.R.F.P.S., LL.D. Glasg.

THE death of Dr. Freeland Fergus, the well-known ophthalmologist, was announced last week. It occurred on Oct. 24th at his residence, Fernycrag, Rothesay, in the seventy-fifth year of his age. He was the son of Dr. Andrew Fergus, of Glasgow, a well-known sanitarian and formerly president of the Royal Faculty of Medicine and Surgery, Glasgow.

Andrew Freeland Fergus was educated at the University of Glasgow, where he graduated M.B., C.M., in 1888. After holding several resident appointments he decided to make ophthalmology a specialty, and with that purpose studied under Snellen at Utrecht for a considerable period. On his return he was elected to the staff of the Glasgow Eye Infirmary and shortly afterwards to the Royal Infirmary, Glasgow. With these large fields of observation open to him he rapidly became a recognised authority in his subject. He translated Meyer's Diseases of the Eye, and published a certain number of sound papers in medical journals. At Anderson's College he was elected professor of ophthalmology, and lectured at the institution while he was also an examiner in ophthalmology at the Royal Faculty of Physicians and Surgeons, of which corporation he became President.

His public and professional work were equally distinguished. He was among the most energetic of those who promoted the existing machinery for the examination of the blind in Scotland, and became president of the Scottish National Federation of Institutions and Societies for the Blind. He was a medical referee under the Workmen's Compensation Act, and the locality of his activities gave him a fruitful opportunity for observing miners' nystagmus. His views on the treatment, and especially on the question of unfitness for work of the subjects of this disease, were clear-cut and valuable, and he became a recognised authority on the subject, collecting information from many sources in Europe and America. He wrote on the subject in THE LANCET, among other places, but he was not a frequent author, publishing only one small volume on elementary ophthalmic optics in 1903. During the war Prof. Fergus worked with great assiduity in examining the eyes of recruits and treating eye diseases among the soldiers, especially in the 4th General Scottish Hospital, and for these services he was officially commended. In addition to the appointments mentioned he was also president of the Glasgow Medico-Chirurgical Society, vice-president of the Glasgow Art Club, and president of the Royal Philosophical Society of Glasgow, of which institution he was for many years honorary secretary.

Dr. Fergus, who was unmarried, was the brother of Dr. John Fergus, who has also filled the presidential chair of the Royal Faculty; the two sons following in the steps of the father.

LAWRIE HUGH McGAVIN, C.B.E., F.R.C.S. Eng.

WE regret to announce the death of Mr. Lawrie McGavin, which occurred on Oct. 31st at Folkestone, in the sixty-fourth year of his age.

Lawrie Hugh McGavin was born in 1868, the son of Mr. John McGavin, of Calcutta. He was educated at Fettes College and Sandhurst, his original intention being to join the army. But in 1893 he entered Guy's Hospital as a student, obtained the English double qualification in 1898, and, after filling the usual resident appointments, became F.R.C.S. Eng. in 1890. At Guy's he held the post of surgical registrar, and later became surgeon to the Women's Hospital, Soho, and the North-West London Hospital. At the time of his death he was consulting surgeon to the Women's Hospital and the Dreadnought Hospital, Greenwich. During the war he held a number of hospital appointments, being surgeon to King George's Hospital, the Endsleigh Hospital for Officers, and the Michie Red Cross Hospital, while he was also a member of the final appeal board of medical assessors. For these services he was created C.B.E.

Mr. McGavin married in 1892 Edith Mary, daughter of the late Horatio Beauchamp, of Melbourne.

MEDICAL NEWS

Royal College of Physicians of London

At a comitia of the College on Oct. 27th, with Lord Dawson, the president, in the chair, Dr. H. C. Cameron, Dr. W. E. Hume, Sir Hubert Bond, and Dr. W. W. Jameson were elected councillors. The following were elected representatives of the College: Dr. H. Letheby Tidy as a member of the committee of management of the Conjoint Examining Board; Dr. Comyns Berkeley on the Central Midwives Board; Dr. J. H. Abram on the court of governors of the University of Liverpool; Dr. A. S. Barnes on the court of governors of Birmingham University; and Sir Stanley Woodwark on the Central Council for District Nursing. The president announced that Sir George Buchanan had been appointed Milroy lecturer for 1934, and that the Jenks memorial scholarship for 1932 had been awarded to Gerald Sutherland Irvine, late of Epsom College.

The FitzPatrick lectures on the Development of Neurology from the Commencement of the Nineteenth Century to the Present Time will be delivered by Dr. James Collier on Nov. 8th and 10th, and the Lloyd Roberts lecture on the Liberal Education of the Body by Prof. L. P. Jacks on Nov. 22nd, all at 5 P.M.

The following candidates, having satisfied the Censors' Board, were elected to the membership:—

Ernest Henry Capel, M.B. Lond.; Paul Ward Farmer, Jnr., M.B. Melb.; Clifford Gordon Gordon-Wilson, L.R.C.P.; Harold Kingston Graham Hodgson, M.B. Durh.; Robert Dennis Harding, L.R.C.P.; Reginald St. Alban Heathcote, M.D. Oxf.; John Collinson Heather, M.B. Lond.; Henry Lovell Hoffman, M.B. Camb.; Henry Robert Holmes, M.B. Lond.; Max Honigsberger, L.R.C.P.; Harry Barlow Jackson, M.B. Lond.; Geoffrey Hales Jennings, L.R.C.P.; Rajmal Kasliwal, M.B. Lucknow; Eldon Munro Litchfield, L.R.C.P.; Herbert Geoffrey McComas, M.B. Lond.; Arthur Ian Granville McLaughlin, M.B. Sydney; Ian Gideon McLean, M.D. Melb.; Willson Alexander McTavish, M.D. Toronto; George Douglas Morgan, L.R.C.P.; Richard John Langford O'Donoghue, M.B. Lond.; Harold Anstruther Palmer, M.B. Manch.; Kallenkarai Narayana Pisharoty, M.B. Madras; William Gordon Robson, M.B. Edin.; David Paul Hannaford Schafer, M.B. Melb; Philip Graham Stock, M.B. Bristol; Ramaier Viswanathan, M.D. Madras; John Frederick Wilkinson, M.D. Manch.; and John Alan Bruce Young, M.B. Edin.

Licences to practise were conferred upon 130 candidates, 113 men and 17 women, who have passed the final examination of the Conjoint Board and have complied with the by-laws of the College. The following are the names and medical schools of successful candidates:—

Mary-Ann C. Adams, Royal Free; R. M. Alford, St. Thomas's; J. C. G. Anderton, Camb. and Westminster; H. J. B. Atkins, Oxford and Guy's; R. H. Bailey, Camb. and King's Coll.; Helen Baker, Royal Free; N. J. Bakhru, M.B. Bombay, West London; J. B. Bamford, St. Bart.'s; P. Baron, M.B. Cape Town; S. A. Bather, Oxford and St. Mary's; T. P. Binns, Guy's; M. S. W. Bisdee, Tasmania and St. Mary's; E. N. Brockway, St. Thomas's; Doris B. Brown, M.B. Leeds; R. C. Brown, St. Thomas's; R. H. Brown, Camb. and Westminster; W. M. Capper, St. Bart.'s; P. K. Chanmugam, L.M.S. Ceylon, King's Coll.; E. M. Clark, St. Bart.'s; C. A. Clarke, Camb. and Guy's; C. C. Cobb, Oxford and St. George's; J. C. Colbeck, Guy's; N. C. Coombs, Camb. and Bristol; S. W. Cooper, St. Mary's; S. M. Cruz, Madras and Birmingham; A. R. Cutlack, St. Bart.'s; Joan M. C. Dancy, Royal Free; A. L. Davies, Middlesex; Doris A. Dean, Birmingham; R. A. Desai, M.B. Bombay, West London; Phyllis M. Dobbs, Camb. and Royal Free; Joan C. Drury, Camb. and Royal Free; Evelyn M. Eggleton, Univ. Coll.; G. M. Evans, Bristol; R. C. Evans, Univ. Coll.; J. Fishman, London; L. P. Fitch, St. Thomas's; Fanny C. Fraser, Royal Free; T. H. Gardener, London; D. W. Geidt, Guy's; W. G. Gill, Camb. and Guy's; J. A. S. Goonawardena, L.M.S. Ceylon, Univ. Coll.; W. B. Gough, M.B. Birmingham; E. H. B. Grey, London; H. C. P. Gunewardene, L.M.S. Ceylon, St. Bart.'s; B. P. Harris, Camb. and Middlesex; Augusta G. Harrison, Charing Cross; C. L. Hay-Shunker, Madras and St. Bart.'s; O. S. Heyns, Cape and Univ. Coll.; E. A. Hoare, St. Thomas's; Phyllis L. Holliday, Camb. and Leeds; H. D. Holt, Univ. Coll.; A. W. J. Houghton, St. Bart.'s; T. G. F. Hudson, St. Thomas's; Elizabeth M. Hutton, Royal Free; W. A. Hyslop, London; R. James, St. Mary's; N. D. Jekyll, Camb. and London; Ruby D. Johnson, Oxford and Univ. Coll.; W. H. Jones, Manchester; F. R. Kitchin, M.B. Liverpool; R. G. Knight, Camb. and Guy's; S. Levontin, London; B. S. Lewis, St. Bart.'s; W. Lewis, Camb. and Guy's; D. P. Lockhart, St. Thomas's; Barbara R. Lockwood, Royal Free; J. Lubran, Guy's; J. J. McCann, St. Thomas's; D. C. McClure, London; D. U. MacDonald, Leeds; M. B. McGinn, London; S. A. MacKeith, St. Mary's; V. S. Majmudar, M.B. Bomb., Birmingham; K. Malik, L.D.S. Eng., London; J. B. Maurice, Oxford and St. Mary's; I. R. W. Merrick, King's Coll., C. J. Morgan, Cardiff and St. Bart.'s; F. P. Morgan, M.B. Melbourne; H. F. Moseley, Oxford and St. Thomas's; N. J. S. Nathan, Charing Cross; G. F. O'Connor, Camb. and Birmingham; Elizabeth M. Ogden, King's Coll.; G. Y. Oon, Charing Cross; M. W. L. Owen, Camb. and St. Mary's; R. Q. Parkes, Camb. and St. Thomas's; R. V. Payne, Camb. and Guy's; H. E. Pearse, Bristol; C. J. P. Pearson, St. Thomas's; G. E. Phillips, Cardiff; R. W. Pickering, Cape and Guy's; W. S. Pitt-Payne, L.M.S.S.A. Lond., Guy's; E. C. Powell, Guy's; F. J. P. Price, Cardiff and King's Coll.; R. G. Pulvertaft, Camb. and St. Thomas's; F. Ridehalgh, Camb. and Charing Cross; A. E. A. Ridgway, A.M.I.Mech.E., Charing Cross; B. F. B. Russell, St. Bart.'s; H. K. B. Rustogi, M.B. Lucknow, West London; V. M. Seifert, London; M. Shankia, M.B. Leeds; B. Sharma, M.B. Punjab, London; R. T. Shipman, St. Thomas's; S. C. Shore, Cape and Guy's; J. P. Singer, Camb. and Guy's; H. Singh, Punjab and Birmingham; V. C. Snell, Camb. and St. Bart.'s; W. H. C. Spooner, St. Mary's; E. J. Stubbs, Guy's; R. Sykes, Manchester, J. W. C. Symonds, St. Bart.'s; A. E. Terry, Leeds; Jessie A. Thirtle, Royal Free; H. H. Thompson, Manchester; J. R. Thornton, St. Thomas's; T. M. Tyrrell, Camb. and St. Thomas's; Patricia I. Unsworth, Liverpool; H. B. D. Vaughan, St. Bart.'s; C. B. M. Warren, Camb. and St. Bart.'s; W. H. C. Watson, Camb. and St. Thomas's; G. C. Welply, St. Mary's; J. H. West, St. Bart.'s; H. M. Williams, St. Bart.'s; H. V. Williams, Univ. Coll.; H. R. I. Wolfe, St. Thomas's; L. J. Wolfson, Guy's; T. G. R. Woods, St. Bart.'s; S. W. Wright, Guy's; H. W. Wykes, Middlesex; and K. E. L. Yuill, Birmingham.

Diplomas in Public Health were conferred (jointly with the Royal College of Surgeons) upon the following 15 candidates:—

N. D. Begg, R. Evans, J. Galea, P. Henderson, C. B. Huss, Dorothy M. James, E. T. James, H. N. C. van G. Kelaart, I. B. Lawrence, W. D. Lovelock-Jones, B. S. Nanjiani, T. St. M. Norris, J. A. D. Radcliffe, R. E. Robinson, and L. A. S. Trott.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery.—G. W. Aston, Univ. Coll. Hosp.; F. W. Baskerville, St. Mary's Hosp.; R. N. O'D. Burns, Univ. of Bristol; M. B. Chandulal, Hongkong and Univ. Coll. Hosp.; W. E. P. Corbett, St. Mary's Hosp.; C. H. Fagge, Univ. of Oxford and Guy's Hosp.; F. M. F. Forrest, St. Mary's Hosp.; A. J. McBrearty, Queen's Univ., Belfast; M. N. Mandelstam, Univ. of Witwatersrand and Middlesex Hosp.; J. W. Meyers, King's Coll. Hosp.; A. E. A. Ridgway, Charing Cross Hosp.; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and R. H. Wheeler, Univ. of Sheffield.

Medicine.—J. L. Bates, Guy's Hosp.; E. F. David, Univ. of Cologne and Royal Free Hosp.; J. O. Gordon, Middlesex Hosp.; J. Harris, Univ. of Witwatersrand and Middlesex Hosp.; E. J. Littledale, Guy's Hosp.; A. J. McBrearty, Queen's Univ., Belfast; S. Pugmire, Univ. of Liverpool; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and M. Sourasky, Charing Cross Hosp.

Forensic Medicine.—E. L. Burgess, King's Coll. Hosp.; J. L. Cope, Univ. of Cambridge and Westminster Hosp.; K. M. Hahn, Middlesex Hosp.; J. E. Morrish, St. Mary's Hosp.; S. Pugmire, Univ. of Liverpool; P. J. Purcell, St. Mary's Hosp.; H. Shukry, Univ. of Cairo and Univ. Coll. Hosp.; and B. K. Siddhante, Calcutta Med. Coll.

Midwifery.—F. M. F. Forrest, St. Mary's Hosp.; K. M. Hahn, Middlesex Hosp.; D. Kyle and P. J. Purcell, St. Mary's Hosp.; B. K. Siddhante, Calcutta Med. Coll.; and R. C. P. Thomas, St. Mary's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery: R. N. O'D. Burns, M. N. Mandelstam, M. B. Chandulal, J. W. Meyers, C. H. Fagge, S. Pugmire, A. J. McBrearty, and A. E. A. Ridgway.

A Livery dinner will be given by the Master and Wardens of the society in the Apothecaries' Hall, Blackfriars, on Tuesday, Nov. 15th, at 7.30 P.M.

British Institute of Philosophy

Sir Arthur Eddington, F.R.S., will deliver an address on Physics and Philosophy at University College, Gower-street, London, W.C., at 8.15 P.M. on Tuesday, Nov. 15th. Tickets may be had on application to the director of studies, University Hall, 14, Gordon-square, W.C. 1.

University of London

At a meeting of the Senate on Oct. 26th it was decided that the title of the university chair of physiology at the Middlesex Hospital medical school should now be the John Astor chair of physiology. It has lately been announced that Major J. J. Astor, M.P., was the anonymous donor who endowed the chair with £20,000 in 1920.

In consequence of the gift of £1500 a year for seven years from the Prudential Assurance Company for the endowment of the chair of public health tenable at the London School of Hygiene and Tropical Medicine, it was decided that the chair should be known as the Prudential chair of public health for the duration of the gift.

The degree of D.Sc. in biochemistry was conferred on Dr. E. C. Dodds, Courtauld professor of biochemistry at the Middlesex Hospital medical school.

The University College Committee have elected Sir John Rose Bradford, F.R.S., as chairman in succession to Lord Chelmsford.

Sir Charles Sherrington, O.M., will deliver two lectures on Reflex Action, at University College, Gower-street, London, on Thursdays, Nov. 17th and 24th, at 5.30 P.M. No ticket is required for admission.

University of Manchester

Dr. A. N. Birkett has been appointed demonstrator in anatomy.

National University of Ireland

Dr. Walter Fallon has been appointed professor of medicine in University College, Galway.

Guy's Hospital

Dr. C. H. Rogerson has been appointed to the Sir Alfred Fripp memorial Fellowship in child psychology, tenable at Guy's Hospital.

National Institute of Industrial Psychology

Lord Macmillan has agreed to succeed Lord D'Abernon as president of this institute. Lord D'Abernon, who has had to resign owing to the pressure of other engagements, succeeded the late Lord Balfour in 1930.

The Place of Biology in Education

In connexion with the conference on this subject, to be held in London on Nov. 30th and Dec. 3rd (see THE LANCET, Oct. 29th, p. 977), a public meeting will be held at the Essex Hall, Essex-street, Strand, W.C., at 6.30 P.M. on Thursday, Dec. 1st. The subject of discussion will be Biology and Education, and the principal speakers will be Dame Helen Gwynne-Vaughan and Prof. A. C. Seward, F.R.S. No tickets are required.

Burton Infirmary Enlargement

Lady Evershed, wife of Sir Herbert Evershed, the chairman, recently opened extensions of Burton-on-Trent Hospital. The works now include a casualty department, an extension of the out-patients' department generally, an ear, nose and throat theatre, a clinic for social hygiene work, a new dispensary and secretarial offices, and a large X ray department. Three wards have been added, and the nurses' and staff quarters enlarged.

Conference on Mental Welfare

A conference on mental welfare will be held at B.M.A. House, Tavistock-square, London, W.C., on Dec. 1st and 2nd. At the first meeting, it is hoped, Sir Hilton Young, the Minister of Health, will open the proceedings; the chairman will be Sir Leslie Scott, and the subject of discussion Problems of Mental Health Work. At the second meeting, on Thursday afternoon, Sir Henry Brackenbury will take the chair, and Dr. R. Ashleigh Glegg will open a discussion on the Social Control of Feeble-minded Children leaving Elementary Schools. On Friday morning Mr. L. G. Brock, chairman of the Board of Control, will preside, and Mr. E. J. Lidbetter will speak on the Inheritance of Mental Deficiency. The last meeting will be devoted to School Retardation as a Factor in certain Conduct Problems of Childhood and Adolescence. Further particulars may be had from the secretary of the Central Association for Mental Welfare, 24, Buckingham Palace-road, London, S.W.1.

Hampstead General Hospital

At the opening of the third winter session of lectures at this hospital on Oct. 26th, under the chairmanship of Sir William Collins, an address was delivered by Sir Ernest Graham-Little, M.P., on the future of the voluntary hospital system. The lecturer gave the arguments, with figures, to support the following propositions: (1) that the voluntary hospitals are in a stronger position financially and morally at the present moment than at any time in recent history; (2) that they command a tradition of service and humane consideration which cannot be imitated by any institutions lacking their long organic growth; (3) that the administration of a voluntary system must be incomparably cheaper than that of any State-controlled system; and (4) that the functions of advancing teaching and research, discharged by the voluntary hospitals, cannot be supplied by institutions functioning under either State or municipal control. Sir Ernest found pessimism as to the future of the voluntary hospitals quite unjustified in the face of the figures quoted by the Prince of Wales at the meeting of the King Edward's Hospital Fund for London last June, which demonstrated the vastly improved position of the previous year; while he reminded the audience of the notable rebuilding operations carried out recently by the London, King's College, Middlesex, University College, Guy's, and St. Mary's Hospitals, solely upon voluntary subscriptions. Sir Ernest, regretting the attitude of the British Hospitals Association, considered that the acceptance of money derived from sweepstakes would be disastrous to the voluntary principle, and quoted a report of King Edward's Hospital Fund to prove that the voluntary hospitals are becoming largely a coöperative effort in which all classes of the community, including the patients, are joining. He closed with a demand for a drastic alteration of the medical curriculum, so that it may fit the needs more closely of the student who is entering general practice.

Annual Dinners

The annual dinner of the Royal Society of Medicine will be held on Thursday, Nov. 17th, at the May Fair Hotel, London, W., Mr. Warren Low, the president, in the chair.

The annual dinner of the British College of Obstetricians and Gynæcologists will be held on Monday, Dec. 5th, at Grosvenor House, London, W., at 7.30 P.M. At 3 P.M. on the same day, H.R.H. the Duchess of York will perform the ceremony in connexion with declaring open the House of the College, 58, Queen Anne-street, London, W.

The annual dinner of the Medico-Legal Society will be held at the Holborn Restaurant, London, on Friday, Dec. 9th, at 7 P.M.

The annual dinner of the Prince of Wales's Hospital Reunion Association will be held at the Trocadero Restaurant Piccadilly-circus, W., on Thursday, Nov. 24th, at 7.45 for 8 P.M., with Dr. C. E. Sundell in the chair. The secretary is Dr. Bertram H. Jones, 47, Queen Anne-street, W. 1.

Liverpool Society of Anæsthetists

An ordinary general meeting of this society, with Dr. A. J. O'Leary, the president, in the chair, was held at the David Lewis Northern Hospital, Liverpool, on Oct. 25th. Dr. I. W. Magill, of the Westminster Hospital, London, gave a demonstration in blind nasal intubation anæsthesia, and a short discussion followed.

The society was formed in July, 1930, and has a membership of 26 ordinary and 9 honorary members. The hon. secretary is Dr. R. J. Minnitt.

New Hospital at Papworth

On Friday last Lady Baron laid the foundation-stone of a hospital at this tuberculosis settlement. There will be accommodation for 84 in-patients, and the out-patients' department will serve the whole of the village. The Bernhard Baron trustees have contributed £20,000 towards the cost. The building has been designed by Mr. McMahon, manager of the building department of the settlement, and Mr. Copsey, both of whom have been patients, and the hospital will, as far as possible, be erected by skilled workers in the colony.

Nottingham General Hospital

The Lord Mayor of Nottingham, Alderman W. Green, has recently opened the new "W. G. Player Wing" of Nottingham General Hospital, which replaces temporary huts erected in 1916. The entire cost, £23,000, has been defrayed by Mr. Player, an anonymous donor has provided the equipment, and the linen has been paid for by the Linen Guild. The new building, which is a male block, is of the one-storey type, and is nearly 400 feet long. It comprises two large and two small wards, with a total of 36 beds, a patients' day-room, a laboratory, and a clinical room with other necessary accommodation.

Maternal Mortality Committee

This committee, whose chairman is Mrs. H. J. Tennant, has arranged for a meeting at Friends House, Euston-road, London, N.W., at 2.30 P.M., on Tuesday, Nov. 15th. Lady Iveagh, the hon. treasurer, will preside, and an address will be given by Sir Hilton Young, the Minister of Health. The committee came into existence about six years ago in order to bring the influence of all women to bear on the question of maternal mortality. At the meeting, it is stated, a resolution will be proposed pressing for improvement in the care of mothers before and after childbirth, and a better standard of nursing and better training for doctors. It will also urge "the putting into force of all the services for the protection of motherhood which the local authorities can use, and which form the nucleus for that comprehensive national maternity service which all in touch with motherhood are anxious to see established." Tickets may be had from the secretary, Miss Tuckwell, C.H., 13, Chesterterrace, S.W.1.

Harrow and Wealdstone Hospital

On Saturday afternoon last a performance of Mr. J. H. McCarthy's "If I were King" was given by the Trinity College Dramatic Company, under the direction of Mr. F. G. Lloyd, at the New Scala Theatre, for the benefit of the Harrow and Wealdstone Hospital, which celebrates this year the twenty-fifth anniversary of its opening. Lady Patricia Ramsay represented Princess Louise, who opened the hospital in 1907, and was to have been present on this "silver wedding" occasion had the weather not been so unfriendly. The house was full of patrons of the hospital and college, who were warmly appreciative of the way in which the piece was staged and played. At the conclusion Mr. Sydney Walton, as president of the hospital, expressed the thanks of the governors to the members of the cast, and revealed an engagement of a permanent character between two of the principal actors. The entr'acte music, conducted by Mr. Henry Geehl, was in keeping with the high level of the acting.

Grocers' Research Scholarships

To encourage original research in sanitary science the Grocers' Company offers scholarships of £300, tenable for one year and renewable for a further term, together with grants towards expenses. Particulars will be found in our advertisement columns.

Royal Photographic Society of Great Britain

An exhibition of cinematography will be held at the galleries of this society, 35, Russell-square, London, W.C., from Nov. 14th to Dec. 10th. An attempt will be made "to place before the public a comprehensive set of exhibits demonstrating the history of cinematography and its present-day applications." A series of evening meetings will be held during the exhibition, at which apparatus will be demonstrated and films projected. The one on Thursday, Nov. 24th, will be devoted to science, medicine, natural history, and research. Admission to the exhibition is free, and seats for the lectures can be reserved.

Enlargement of Worcester Infirmary

On Friday last the Prince of Wales opened extensive enlargements of this hospital, which have cost £60,000; the scheme, when completed, will have cost £90,000. The new works include an orthopædic block, a pathological laboratory, two theatres, and a nurses' home. The last-named, which is connected with the hospital by a covered passage, accommodates 62 nurses, and among its amenities is a hairdressing room. One of the rooms will be used as a coroner's court.

Ormond Maternity Trust

In aid of the advanced post-graduate courses in midwifery organised by this trust in connexion with the Queen's Institute of District Nursing, three lectures will be given in London during November. On Wednesday, the 9th, at 3.15 P.M., at 1, Cadogan-gardens, S.W., Mrs. Stanley Baldwin will preside, and Mr. L. Carnac Rivett, assistant obstetric surgeon to the Middlesex Hospital, will speak on the use of anæsthetics in midwifery. On Thursday, the 17th, at 5.30 P.M., at 25, Lennox-gardens, S.W., Miss Darbyshire, matron of University College Hospital, will give an address on the Report of THE LANCET Commission on Nursing. Both Miss Darbyshire and the chairman, Mr. Lister Harrison, were members of the Commission. The third lecture will be given at Queen's College, 43, Harley-street, W., at 5.30 P.M. on Thursday, Nov. 24th. Lady Salisbury will preside, and Dr. J. S. Fairbairn, president of the British College of Obstetricians and Gynæcologists, will speak on the Maternal Mortality Report. Tickets for the lectures may be had from Mrs. Bruce Richmond, 3, Sumner-place, London, S.W. 7.

The Government and Local Expenditure

In the absence of the Minister of Health, Mr. Geoffrey Shakespeare, Parliamentary Secretary to the Ministry, received on Oct. 31st a deputation from the Public Economy Association of South Wales and Monmouthshire, which represents almost all the industries in that district, local chambers of commerce, trade associations, and land-owners. All the speakers stressed the decline of trade in South Wales since the war, and especially in the last two or three years. At the same time, they said, the expenditure of local authorities, both on capital and on revenue account, had greatly increased, and the burden on the depressed industries of the area was now so crushing that there was a real danger of collapse. The deputation suggested that the Minister of Health should refuse to sanction any further borrowing, except in cases of urgency, and even then only after careful inquiry into the future effect on local industry. He should also encourage, where possible, the conversion of outstanding loans to lower rates of interest, or, if necessary, obtain powers to this end. Thirdly, local authorities should be pressed to dispose of uneconomic trading undertakings to private enterprise. When the expenditure of a particular local authority was established to be grossly excessive, the Minister should supersede them and appoint a commissioner. In the course of his reply Mr. Shakespeare explained that the Government's policy was to restrict very severely the incurring of fresh capital expenditure on services not likely to be remunerative. The success of the conversion of war loan made it much easier for local authorities to convert their own loans on favourable terms. As regards trading undertakings run at a loss, it must be recognised that it might sometimes be difficult to induce private enterprise to take them over. The suggestion to appoint commissioners implied, of course, a fundamental break with the traditions of English local government; there had been a temporary power—which had been exercised in a few cases—to appoint commissioners for poor-law purposes, but this had now lapsed.

The Infants Hospital

On Monday last H.R.H. the Princess Royal, president of the hospital, opened the new out-patient department in Bentinck-street, Westminster, part of a much-needed extension scheme which has been made possible principally by the generosity of Sir Gomer Berry, the chairman, and Sir Robert Mond, the treasurer and founder. The new department, which was described in our issue of Oct. 8th (p. 810), is constructed on modern lines, with medical, surgical, ophthalmological, dental, and ear, nose, and throat consulting-rooms, and a well-equipped operating theatre for minor operations. There are also special rooms for X ray work, light treatment, and massage, and a large waiting hall with a refreshment bar adjoining. On the top floor of the building, but wholly disconnected from the out-patient department, there will be a fully equipped milk laboratory with dietetic kitchen, and in the basement there will be five isolation rooms for out-patients, a pathological laboratory, a post-mortem room, and a mortuary and chapel. It is hoped that a new in-patient block, which will raise the number of beds from 50 to 100, will be ready by the middle of next year. This block will include private wards for paying patients, special wards for nursing mothers, a complete operating theatre suite and administrative offices.

Appointments

London County Council: RAE, L. J., M.B., B.Ch., Radiologist, St. Nicholas' Hospital. MONTGOMERY, S. K., M.D. Lond., Radiologist, Hammersmith Hospital.

Vacancies

For further information refer to the advertisement columns

Barrow-in-Furness County Borough.—Asst. M.O. £500.
Bedford County Hospital.—Second H.S. At rate of £140.
Belgrave Hospital for Children, 1, Clapham-road, S.W.—Asst. Surgeon. 50 gns.
Bolingbroke Hospital, Wandsworth Common, S.W.—Clin. Asst., Ear, Nose, and Throat Dept. £100.
Bradford Royal Eye and Ear Hospital.—Jun. H.S. £150.
Brighton, Royal Alexandra Hospital for Sick Children.—H.P. £100.
Bristol Royal Infirmary.—Hon. Physician.
Burton-on-Trent General Infirmary.—Cas. O. and H.P. Each £150.
Evelina Hospital for Sick Children, Southwark, S.E.—Physician to Out-patients.
General Register Office, Somerset House, W.C.—Medical Statistical Officer. £833.
Grocers' Company, Grocers' Hall, E.C.—Three Research Scholarships. Each £300.
Herefordshire General Hospital.—Hon. Surgeon.
Hôpital et Dispensaire Français, 172, Shaftesbury-avenue, W.C. Jun. Res. M.O. £100.
Hull Municipal Maternity Home and Infants Hospital.—Jun. Res. M.O. £100.
Hull Royal Infirmary.—Res. Cas. O. £200.
Leicester Royal Infirmary.—Res. Asst. Anæsthetist. At rate of £250.
London Hospital, E.—First Asst. and Reg. £300. Also First Asst. to Gynæcological and Obstetrical Dept.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Manchester Babies' Hospital, Burnage Lane, Levenshulme.—Sen. Res. M.O. At rate of £125.
Mildmay Mission Hospital, Austin-street, Bethnal Green, E.—Asst. Cas. O. At rate of £125.
Oldham Royal Infirmary.—H.S. At rate of £175.
Plymouth, South Devon and East Cornwall Hospital.—H.P. and H.S. At rate of £120 and £100 respectively.
Preston, Lancs, Riddulph Grange Orthopædic Hospital.—Sen. H.S. Also Jun. H.S. At rate of £250 and £150 respectively.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Rochester, St. Bartholomew's Hospital.—Res. Surg. O. At rate of £225.
Royal Dental Hospital of London, Leicester-square, W.C.—Two House Anæsthetists. 10*s.* 6*d.* per session. Also Hon. Asst. Anæsthetist.
Royal Free Hospital, Gray's Inn-road, W.C.—First H.P., Surg. Reg. £200. Also Half-time Med. Reg. At rate of £100.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W. H.S. for Country Branch. At rate of £150.
Royal Northern Hospital, Holloway, N.—Med. Reg. £100. Also H.P. At rate of £70.
Southend-on-Sea General Hospital.—Third Hon. Anæsthetist.
Sudan Medical Service.—M.O. £E.720.
Tilbury Hospital.—Med. Supt. £200.
Willesden General Hospital, N.W.—Cas. O., H.S., and H.P. All at rate of £100. Also Hon. Med. Staff Ophth. Surgeon.
Worcester General Infirmary.—Third Res. M.O. £120.
York County Hospital.—H.P. £150.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Porlock (Somerset).

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 8th.—5 P.M., THERAPEUTICS AND PHARMACOLOGY. Paper: Dr. E. P. Poulton: The Nature of the Action of Insulin and Some Results with High Carbohydrate and Low Fat Diet. 8.30 P.M., PSYCHIATRY. Dr. Henry Devine: The Problem of Schizophrenia. (Presidential address.)

FRIDAY.—5.30 P.M., CLINICAL. (Cases at 4.30 P.M.) Cases: Dr. H. V. Morlock: 1. Hæmopneumothorax. Prof. J. M. Woodburn Morison: 2. Myelomata Successfully Treated With X Rays. Dr. Terence East: 3. Hypertrophic Osteo-arthropathy. Dr. Philip Ellman: 4. Angina Pectoris with Recent Coronary Thrombosis, Infarction, and Cardiac Aneurysm. 5. Pulmonary Tuberculosis Treated with Insulin. Dr. Geoffrey Konstam: 6. Pre-gangrenous Changes in a Finger Due to Senile Arterial Degeneration. 7. Ophthalmoplegic Migraine. Dr. C. Newman: 8. Subconjunctival Hæmorrhage with Splenic Enlargement. Other cases will be shown. 8.30 P.M., OPHTHALMOLOGY. (Cases at 8 P.M.) Paper: Mr. E. D. D. Davis: Three Cases to Illustrate Modified Toti's Operation for Lacrymal Obstruction, with X Ray Photos of Dilatation of the Lacrymal Sac Reinforced by the Injection of the Sac with Lipiodol. Cases will be shown.

HARVEIAN SOCIETY OF LONDON.

WEDNESDAY, Nov. 9th.—8.30 P.M. (at Paddington Town Hall), Prof. Grey Turner: "Nil Desperandum."

SOUTH-WEST LONDON MEDICAL SOCIETY, Bolingbroke Hospital, Bolingbroke-grove, Wandsworth Common, S.W.

WEDNESDAY, Nov. 9th.—9 P.M., Dr. J. A. Torrens: Consideration on the Treatment of Certain Common Medical Conditions.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY, 11, Chandos-street, Cavendish-square, W.

THURSDAY, Nov. 10th.—8.30 P.M., Dr. J. S. Fairbairn: Psychology in Gynæcological and Obstetric Practice, followed by Dr. Marjory Edwards and other speakers.

PADDINGTON MEDICAL SOCIETY.

TUESDAY, Nov. 8th.—9 P.M., in the Great Western Royal Hotel, Paddington. Dr. Ernest Jones: The Significance of Psycho-analysis in Modern Medicine.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Nov. 11th.—Dr. Donald Paterson: Some Advances in Pædiatrics.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

TUESDAY, Nov. 8th, and following THURSDAY.—5 P.M., Dr. James Collier: The Development of Neurology from the Commencement of the Nineteenth Century to the Present Time (FitzPatrick Lectures).

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.

MONDAY, Nov. 7th.—5 P.M., Mr. R. Davies-Colley: Tumours of the Jaw (Museum demonstration).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 7th, to SATURDAY, Nov. 12th.—MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W. Series of Lectures on Renal Disease. Tues., at 4 P.M., Lecture by Dr. A. Arnold Osman on Nephritis and Nephrosis. (Free to Members.)—WEST END HOSPITAL FOR NERVOUS DISEASES, 73, Welbeck-street, W. A Course in Neurology daily at 5 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. A Course in Medicine, Surgery, and Gynæcology. Nov. 7th to 26th. Afternoons and some mornings.—HOSPITAL FOR CONSUMPTION, Brompton, S.W. A Course in Practical Pathology dealing with Laboratory Methods and the Interpretation of Results. Thurs., at 11.45 P.M. Limited to 6.—10, BEDFORD-SQUARE, W.C. Clinical Pathology Demonstration by Dr. A. Knyvett Gordon on Wed., at 8.30 P.M. (specially suitable for M.R.C.P. candidates), on Splenic Enlargement.—These Courses are open only to Members of the Fellowship of Medicine.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 7th.—2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Motor System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Martin: Intracranial Pressure.

WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic. 3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Motor System.

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Bernard Hart: Psychoneuroses.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, Nov. 7th.—10 A.M., Skin Department, Surgical Wards. 2 P.M., Eye and Gynæcological Out-patients. 4.15 P.M., Lecture, Mr. Sinclair: Gastric and Duodenal Ulcers.

TUESDAY.—10 A.M., Medical and Surgical Demonstrations. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M. Lecture, Dr. Ironside: The Nervous System.

WEDNESDAY.—10 A.M., Medical Wards, Children's Out-patients. 2 P.M., Eye Out-patients. 4.45 P.M., Venereal Diseases Demonstration.

THURSDAY.—10 A.M., Neurological Out-patients, Fracture Demonstration. 2 P.M., Eye and Genito-urinary Out-patients. 4.15 P.M., Lecture, Mr. Davenport: Injuries to the Eye.

FRIDAY.—10 A.M., Medical Wards, Skin Department. 2 P.M., Throat, Nose, and Ear Out-patients. 4.15 P.M., Lecture, Dr. Ironside: The Nervous System.

SATURDAY.—10 A.M., Medical Wards, Children's Out-patients, Surgical Wards.

Daily, 2 P.M., Operations. Medical and Surgical Out-patient Departments.

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL POST-GRADUATE SCHOOL.

WEDNESDAY, Nov. 9th.—4 P.M., Mr. A. Clifford Morson: Psychological and Clinical Results of Division of the Vas Deferens.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 11th.—4 P.M., Mr. F. Watkyn-Thomas: Lateral Sinus Thrombosis.

ST. PETER'S HOSPITAL FOR STONE, POST-GRADUATE COURSE, Henrietta-street, Covent Garden, W.C.

WEDNESDAY, Nov. 9th.—3 P.M., Dr. J. Roth: Modern Uro-radiological Investigations.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 9th.—4.30 P.M., Mr. Kenneth Walker: Past, Present, and Future of Transurethral Prostatectomy.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 8th, and following THURSDAY.—5 P.M., Dr. A. Whitfield: Tuberculosis Cutis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 10th.—9 P.M., Dr. J. A. Drake: Eczema and its Treatment.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James' Hospital, Ouseley-road, Balham, S.W.

WEDNESDAY, Nov. 9th.—4 P.M., Dr. W. J. O'Donovan: Dermatological Statistics.

ROYAL INSTITUTE OF PUBLIC HEALTH, Queen-square, W.C.

WEDNESDAY, Nov. 9th.—4 P.M., Dr. H. Crichton-Miller: Prevention of Mental Disorders.

THURSDAY.—4 P.M., Dr. R. G. Gordon: Physiological Basis of Mental Deficiency.

MANCHESTER HOSPITAL FOR CONSUMPTION AND DISEASES OF THE THROAT AND CHEST, Hardman-street, Deansgate.

WEDNESDAY, Nov. 9th.—4.30 P.M., Mr. Victor Lambert: Ulcerative Conditions of the Pharynx.

ANCOATS HOSPITAL, Manchester.

THURSDAY, Nov. 10th.—4.15 P.M., Dr. A. Renshaw: Investigation of Pyrexia.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

WEDNESDAY, Nov. 9th.—4.15 P.M. (at the Royal Infirmary), Dr. John Henderson: Medical Cases.

MANCHESTER ROYAL INFIRMARY.

TUESDAY, Nov. 8th.—4.15 P.M., Dr. D. Dougal: Pregnancy in Relation to General Diseases.

FRIDAY.—4.15 P.M., Mr. W. R. Douglas: Demonstration of Surgical Cases.

Births, Marriages, and Deaths

BIRTHS

GRANT.—On Oct. 27th, 1932, at the Mothers' Hospital, Lowe, Clapton-road, to Florence Margaret Grant (née Gamble) M.D., M.R.C.P., wife of Arthur Stanley Grant, of 306, St. James-court, Buckingham Gate, S.W.1—a son.

MARRIAGES

TUCKETT—THOMPSON.—On Oct. 22nd, 1932, at Cobham, Cedric Ivor Tuckett, M.Chir., to Lettice Charlotte, younger daughter of Mr. and Mrs. W. Graham Thompson.

DEATHS

BLACK.—On Oct. 25th, at a nursing home, Tunbridge Wells, Dr. Arthur Campbell Black, aged 66.

FERGUS.—On Oct. 24th, suddenly, at Fernycrag, Rothesay, Andrew Freeland Fergus, M.D., LL.D., F.R.F.P.S. Glasg., eldest son of the late Andrew Fergus, M.D., M.R.C.S. in his seventy-fifth year.

MCGAVIN.—On Oct. 31st, at Bouverie-road West, Folkestone, Lawrie Hugh McGavin, C.B.E., F.R.C.S., aged 63.

NICHOLSON.—At Ryde, Thomas Goddard Nicholson, M.B., &c., in his seventy-first year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Ottawa Agreements Bill

ON Thursday, Oct. 27th, the Ottawa Agreements Bill was read a second time in the House of Commons by 423 votes to 77.

Ottawa and Cod-liver Oil

On Monday, Oct. 31st, the House of Commons considered in Committee the Ottawa Agreements Bill. Sir DENNIS HERBERT, Chairman of Committees, was in the chair.

Mr. GEORGE HALL moved an amendment to exclude cod-liver oil, castor oil, cocoanut oil, and certain other oils from the scheduled duties. He said that cod-liver oil was in use in almost every working-class household in this country, especially where there were young children, and local authorities spent considerable sums in purchasing bulk supplies for hospitals and sanatoria. Those authorities were concerned as to the increase in price which would result from this new imposition, and they considered that they ought not to be asked to pay an increased price for this commodity for the purpose of encouraging the cod fishing and cod-liver oil industry in Newfoundland. The Opposition would take every possible opportunity of doing their utmost to prevent the enforcement of this duty, which might be described as an imposition on the invalid and the cripple.

Mr. MALLALIEU, in supporting the amendment, said he associated himself with everything that Mr. Hall had said on the question of a rise in the price of cod-liver oil. It was suggested that if there was any rise in price it would be insignificant. But it seemed to be quite forgotten that this was a time of falling wages, and small amounts added up considerably in the aggregate.

Mr. H. G. WILLIAMS said that they were told that Newfoundland oil was not good enough for medicinal purposes. Two or three years ago Prof. Drummond, of University College, London, and Prof. Hilditch, of the University of Liverpool, were invited by the Empire Marketing Board to make an authoritative report on supplies of cod-liver oil in the British Empire. In page 114 of that report its authors wrote as follows :—

"At the present moment a considerable proportion of the cod-liver oil sold in this country is of relatively low medicinal value, largely because the pharmaceutical trade has a preference for the pale oils—mainly of Norwegian origin. In some cases, these oils are sold with a guarantee of vitamin activity that is virtually worthless, as the figures or 'units' given are often based on unreliable methods of testing."

This was the oil which the Liberal Party wanted people to consume. In pages 124-5 these scientific gentlemen, who had really been intimate with the subject, stated this as their conclusion :—

"Of the oils from the important cod areas studied, those from Newfoundland were found to be of richest vitamin potency. Next in order of merit came those of Icelandic origin. The oils from Scotland were found to be intermediate in value between the rich Newfoundland oils and the much poorer class of oils of Norwegian origin."

In view of authoritative statements like that it was really time that that section of the Liberal Party which was opposing this Bill should abandon the vote-catching device of trying to terrify electors by saying that the health of their children was going to be imperilled. He really asked these gentlemen to drop this campaign, which was not creditable to a party with great traditions.

Dr. BURGIN (Parliamentary Secretary to the Board of Trade), replying for the Government, said that they were passing through a period of extremely low prices, and consequently it was possible by arithmetic to make the cod-liver oil duty appear to be a very high ad valorem figure. That was quite a fallacious argument, because the existing price level was far too low. The ordinary method under which medicinal cod-liver oil was sold in a retail chemist's establishment was in an 8-ounce bottle. Taking the duty at the level proposed by the Ottawa agreements, it would work out at a penny on an 8-ounce bottle, but there was no reason why the penny on an 8-ounce bottle should be passed on to the consumer at all. Including the duty, the cost price of the oil was 4*d*. per 8-ounce bottle, and this was sold over the counter at 1*s*. 6*d*.

Sir S. CRIPPS : Will the hon. gentleman give an undertaking on behalf of the Government that steps will be taken to see that no addition to the price is made ?

Dr. BURGIN said that the hon. and learned gentleman knew perfectly well that he could give no such undertaking. Members of the Committee were susceptible to the arguments based on the figures he had given.

The amendment was rejected by 266 to 61—majority 205.

HOUSE OF COMMONS

WEDNESDAY, OCT. 26TH

Medical Treatment of Disabled Men

Mr. SMEDLEY CROOKE asked the Minister of Pensions whether he was aware that disabled men were being refused treatment by the Ministry for the disease which had at one time been accepted as attributable to service, and whether he would see in cases of attributable disability that treatment was at all times available for disabled men.—Major TRYON replied : Wherever it is established that the present condition of a previously accepted disability, whether attributable to or aggravated by war service, is due to such service, any special course of treatment certified to be necessary is provided.

Physically and Mentally Defective War Orphans

Mr. SMEDLEY CROOKE asked the Minister of Pensions whether he would inform the House of the number of physically or mentally defective war orphans over the age of 21 who were still receiving allowances from the Ministry of Pensions.—Major TRYON replied : The number of these cases in receipt of allowances at the end of September last was 87.

National Health Insurance

Mr. BUCHANAN asked the Minister of Health the names of the members of the consultative committee of approved societies which were consulted on the National Health Insurance and Contributory Pensions Act recently passed.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied : The proposals which were embodied in the recent National Health Insurance and Contributory Pensions Bill were submitted to the Consultative Council on National Health Insurance (Approved Societies Work) as a whole. The proposals were approved by the Council as a whole, and the consultation did not take the form of eliciting the views of each individual member, though all members were at liberty to express their views at the meeting when the proposals were under consideration. The proceedings of the consultative council have always been treated as confidential.

Fatal Road Accidents

Sir BERTRAM FALLE asked the Minister of Transport what steps his department had taken since the beginning of the recess to diminish the loss of life from the total of 450, or more, persons per month arising out of road accidents.—Mr. PYBUS replied : During the recess I have, in conjunction with the Home Office and the police, brought to their final stage the arrangements for a special investigation of the causes of fatal road accidents over a period long enough to give definite and reliable results. A form of return suitable for mechanical tabulation has been prepared for use by all police forces in reporting fatal accidents. I believe that by a more complete diagnosis of the causes of fatal accidents it will be possible to devise more effective methods to reduce their number.

THURSDAY, OCT. 27TH

School Meals and Unemployment Relief

Mr. HICKS asked the Minister of Labour whether he was aware that the London County Council, in assessing

the means of applicants for transitional benefit, took into account the value of meals given at school to children; whether this was the usual practice of public assistance authorities; and, if so, whether this practice was approved by his department.—Sir HENRY BETTERTON replied: I understand that regard is had to the value of these meals in the London County Council area and that this is commonly, though not universally, the practice elsewhere. As the same practice is followed by the London authority in dealing with applications for public assistance, their procedure is in conformity with the requirements of the Order in Council governing transitional payments.

Fatality in a Poor-law Institution

Mr. PICKERING asked the Minister of Health whether his attention had been called to the case of Reuben Gilbert, an inmate of the Leicester poor-law institution, who died as the result of slipping on the polished floor, and to the fact that, although there had been several other fatalities previously from the same cause, the floors of the institution were still polished, in compliance with the orders of the Ministry of Health; and whether, in view of these facts, he would inquire into the matter generally and do all that was possible to remove such a danger, especially to the aged and infirm inmates.—Sir E. HILTON YOUNG replied: This inmate was an old man, unable to get about by himself, and was at the time of the accident being assisted by an officer. The inmate did not, as I understand, blame the officer or make any complaint to the authority of the state of the floor, and it is questionable whether the accident was due to that cause. On the general question, I have not made any order on the subject, but I am advised that polished floors have advantages on medical grounds. A dangerously high polish should obviously be avoided, and I am instructing my inspectors to bring this point as occasion offers to the notice of local authorities.

Maternal Mortality

Mr. LUNN asked the Minister of Health what steps he was taking to implement the recommendations in the report of the departmental committee on maternal mortality.—Sir E. HILTON YOUNG replied: So far as the work of local authorities is concerned, the final report of this committee confirms the recommendations made in their interim report which were communicated to those authorities, and on which action has already been taken in many districts. I have recently taken steps to secure the continuance of the system of confidential inquiries into the circumstances of maternal deaths in accordance with the recommendation of the committee, and I am considering what further action can most usefully be taken.

Health Insurance and Poor-law Assistance

Mr. BUCHANAN asked the Secretary for Scotland if he had made inquiries into the question of the director of public assistance in Glasgow and the public assistance committee continuing to defy the law relating to health insurance in the taking into account of the first 7*s.* 6*d.* of health insurance benefit for poor-law purposes; and if he intended to take any action to have the law carried out.—Sir GODFREY COLLINS replied: The Department of Health for Scotland have made representations to the poor-law authority of Glasgow in cases where it appeared that the statutory provision referred to was not being observed. The amount of relief to be afforded in an individual case is, however, a matter for the poor-law authority, subject to the individual recipient's right of appeal on the ground of inadequate relief.

Silicosis and Asbestosis

Mr. JAMIESON asked the Home Secretary the number, down to the last convenient date, of persons employed in the asbestos industry who had been medically examined in pursuance of the Silicosis and Asbestosis (Medical Arrangements) Scheme in England and Wales and Scotland, respectively; the total amount paid by employers to the Medical Expenses Fund in respect of such examinations; and the number of persons certified by the medical board as totally disabled or suspended from employment as suffering from asbestosis.—Sir J. GILMOUR replied: Since June 1st, 1931, when the Silicosis and Asbestosis (Medical Arrangements) Scheme came into force, 1535 workmen have been examined under the scheme in the asbestos industry in England and Wales, and 80 in Scotland. The total amount paid by employers to the Medical Expenses Fund in respect of these examinations is £2300. Certificates of total disablement or suspension on account of asbestosis, or asbestosis accompanied by tuberculosis, have been issued in 30 cases in England and Wales, and 2 cases in Scotland.

Mr. JAMIESON: In view of the large expense incurred by employers and the small number of men found to be unfit for work, will the right hon. gentleman consider rescinding or modifying this scheme?

Sir J. GILMOUR: No, Sir. I think that this new experiment is fully justified. Of course, it is true that it requires very expert examination, but it may be that the cost will be materially reduced in the future.

Lieut.-Commander AGNEW: Is the right hon. gentleman aware that in the case of tin mining the scheme operates to the disadvantage of both employers and employees, especially as the latter cannot get employment?

Sir J. GILMOUR: I think it is too early to make an assertion of that kind.

Defective Eyesight of Juveniles

Mr. LOVAT-FRASER asked the Minister of Health if his attention had been called to the report of the recent investigation by the Ministry of Labour into the question of unemployment among boys and girls under the age of 18, in which it was stated that the chief defect in both sexes was poor eyesight; and if he would inquire into the causes of this evil with a view to counteracting it.—Sir E. HILTON YOUNG replied: The report to which my hon. friend refers indicates the importance of the preservation of eyesight and the prevention of blindness, and my hon. friend will be aware of the work which is already being done in this direction under the maternity and child welfare and school medical services. The whole problem is at present under the consideration of two committees, one of which is appointed by the Board of Education, and I will arrange for this report to be brought to their notice.

TUESDAY, NOV. 1ST

Outbreak of Typhoid at Malton

Mr. TURTON asked the Minister of Health how many cases of typhoid had been discovered at Malton to date; the present condition of the patients; where these were being treated; and whether the cause of the outbreak had been located.—Mr. SHAKESPEARE (Parliamentary Secretary to the Ministry of Health) replied: 88 cases of typhoid fever are known to have occurred at Malton up to and including Oct. 30th. My right hon. friend is unable to say anything about the condition of individual patients, except that three of the patients have died. Patients are being treated in the fever hospitals at York and Driffield and in the cottage hospital at Malton, which has been temporarily appropriated for the purpose. As my right hon. friend is at present advised, the infection appears to have been water-borne, but he will communicate further with my hon. friend when he has received the report of his medical officer who has been investigating the outbreak.

Clapham Maternity Training Hospital

Mr. DENVILLE asked the Minister of Health if any credal tests were imposed on pupils who were training in the Clapham Maternity Training Hospital.—Mr. SHAKESPEARE replied: My right hon. friend has no information on the point raised by my hon. friend. I should perhaps add that my right hon. friend's concern is solely with the efficiency of the training given in such an institution.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

Lt.-Col. E. H. M. Moore, having attained the age for compulsory retirement, is placed on retd. pay.

Maj. A. L. Stevenson to be Lt.-Col.

TERRITORIAL ARMY

Capt. D. Lamont resigns his commn.

Lt. J. Wright to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt.-Col. C. H. J. Fagan and Majs. C. E. K. Herapath and J. C. Marklove, having attained the age limit, relinquish their commns. and retain their rank.

Maj. A. S. Hebblethwaite, from the Active List, to be Maj.

Capt. D. E. Core, having attained the age limit, relinquishes his commn. and retains his rank.

INDIAN MEDICAL SERVICE

Col. E. A. Walker to be Maj.-Gen.

Lt.-Col. E. W. C. Bradfield to be Col.

Lt. (on prob.) D. P. Mitra to be Capt. (on prob.).

Surg. Lt.-Comdr. E. O'Reilly and Capt. J. S. B. Forde to be Capts. (on prob.).

J. W. Bowden and W. Mackie to be Lts. (on prob.).

Maj.-Gen. C. Hudson retires.

Capt. A. K. Menon relinquishes his temp. commn.

NOTES, COMMENTS, AND ABSTRACTS

MENTAL AFTER-CARE

A MEETING of the Mental After-Care Association was held at Springfield Mental Hospital on Oct. 25th, the chair being taken by the President, Lord WAKEFIELD OF HYTHE, who emphasised the fact that the work of the Association was one of salvation, not salvage, since mental disease was curable. The most important thing about the treatment of mental illness was its increasing success. He appealed for funds, and supported his own appeal by wiping off the overdraft of £579. After the Dean of WESTMINSTER had spoken in moving terms of the religious aspect of the work, Miss RUTH DARWIN described after-care work in America. In America there was a readiness to recognise mental illness and no tendency to regard it as a bugbear. People were much more prompt in seeking advice, and young social and medical workers were keen to work on the mental health side. Inevitably this attitude was associated with much superficial psychological talk and with too great eagerness to run to a psychiatric out-patient clinic with the children. In New York State there was a hospital for 6000 mental patients and a new one for 10,000 was being built. There was also a special bureau for social work in the 20 mental hospitals of the State. As a general rule one social worker was added for every hundred patients on parole. Five main aims could be distinguished: (1) to help the doctor in diagnosis and treatment by providing information; (2) to help the patient by coming directly into touch with the home surroundings, and by doing things that had been left undone because of a sudden departure; (3) to help the family to understand what the mental illness of the patient had meant and to wipe out soreness, anger, and irritation; (4) to prepare the way for the patient's return; (5) to help the patient to remain out when once out on parole or recovered. The number of patients able to go out and the length of time they stayed out depended very largely on the number and skill of the social workers.

Attached to the hospitals were community clinics, which met periodically. Here cases were referred from the courts and schools. In the hospital itself was a social service office where all cases were registered, and a central exchange bureau in New York supplied information about the families. The social worker saw each patient in the ward and paid a home visit, and further visits were paid as required. The office was always open on Sundays, as that was the day on which the relatives most often called. One medical officer was in charge of the parole patients who had to report month by month at a clinic. The social workers acted as technical assistants to the doctors attending the medical case conferences. The work was thorough and well organised, and yet was done without over-elaboration of reports in psychological detail. The workers were paid members of the staff and were highly trained. The correlation of knowledge of the home with knowledge of the patient in hospital was a great asset. The work of the Mental After-Care Association had been studied by American visitors before the work over there had been initiated. The need for such work was great and was not only a question of common humanity, but also of common sense.

AFTER-CARE IN LONDON

Mr. E. J. SAINSBURY (chairman of the L.C.C. Mental Hospitals Committee) spoke with high appreciation of the work of the Association. During its 40 years of life, he said, it had extended in every possible way, both in magnitude and in character. In every L.C.C. mental hospital it was called on for a report of home conditions which were of vital importance to the welfare of patients released on trial or discharged. It was useless to send a patient back to a home which would involve him or her in such stress that another collapse was inevitable. No official inquiry could reach the depths plumbed by the Association's workers, and he hoped the time would never come when the L.C.C. would set up a department to take over the work. To have it said by a neighbour, "I saw the County Council inspector at your house yesterday," was to damn the whole effort to help. When there were no friends to help or home fit to go to, the Association stepped in again with its convalescent hospitals. The Association acted as the County Council's almoners and often had to incur additional expenses—a difficulty which the L.C.C. was trying to meet. Patients on trial were visited at home and reports on progress and advice were sent to the authority, the advice invariably being accepted and that over very long periods. The work was of the utmost value to the London County Council. Now that voluntary patients could be received, the Association were taking these cases under the same conditions as they took certified ones. It was in the early stages that the greatest care was required and clinics had been set up throughout London. In these also the Association helped. During the first six months of 1932, preliminary inquiries had been made by the Association in 526 cases; 117 patients had been received into hostels, work had been found for 35 discharged patients, and another 127 had been helped in various ways. In addition, 21 voluntary cases had been taken into hostels, work had been found for 8, and 22 others had been helped. The total was nearly 900 for the six months. Mr. Sainsbury concluded with one or two "human documents" to illustrate the work which was so greatly valued by his Council. He was most grateful of all, he said, for the succour given to young girls who were homeless and friendless.

Mr. C. L. DE SALIS (chairman of the Springfield Mental Hospital Committee) welcomed the Association to Springfield, and said that in Middlesex also they found the Association most helpful. Its good offices were being used more and more, and especially in connexion with the out-patient clinics. Many patients could be sent to hostels from these clinics instead of to mental hospitals. The accounts were in rather a gloomy state; a great deal of money must be provided by voluntary contributions if the work was to go on and to increase. He hoped that the work would always be on a voluntary basis, and that it would never become officialised. People seemed to be far readier to help hospitals than to help after-care. There should be a representative of the Association in every parish, for people must be educated to the fact that mental disease was curable.

Dr. REGINALD WORTH (medical superintendent, Springfield Mental Hospital, and chairman of the Association), in thanking the chairman and speakers, emphasised the voluntary standing of the Association.

FUTURE OF HYGIENE IN THE FAR EAST

IN his Chadwick lecture, delivered in London on Tuesday last, Prof. Kielstra, of Leiden, said that the old theory that "the native is crusted with prejudice" could no longer be regarded as a sufficient explanation of his aversion and indifference to modern hygienic and medical treatment. More thorough investigation showed that these attitudes should be considered in relation to the thought-structure of the indigenous population, the base of which was animistic even where Islam prevailed. Animism by its nature was conservative; therefore hygienic measures met with opposition, except when the fear of an immediate danger as from cholera or small-pox kept it down, or where the native's mind was made accessible to new ideas. In this connexion he greatly praised the work of the

missionary societies. Prof. Kielstra unfolded how modern colonisation itself paves the way for new ideas, since it cannot abstain from measures which influence native society and force its members to adjust their attitude. Moreover, it was sufficiently proved, he said, that when the influence of the indigenous society was eliminated—as, for instance, in the army or among the Javanese labourers on the estates in Sumatra—hygienic results could be obtained as in any western society. In his opinion the public health service should confine its work to general hygienic measures—such as the draining of swamps, the regulating of rivers, and the improvement of housing conditions—until ethnological and social observations showed that the indigenous population was ripe for more individual medical treatment.

THE HOSPITAL ALMONER

A STUDY of hospital social services in England has been published by the Committee of the Hospital Almoners' Association and is obtainable at the Institute of Hospital Almoners, Tavistock House, W.C.1, for 2*s*. It is dedicated to Sir Charles Loch, to whose intimate study of the working of out-patient departments of the London hospitals the foundation of the office of hospital almoner is due. The pamphlet deals briefly with the development of the British hospital system and the early days of almoners' work. The present duties of the hospital almoner are discussed in more detail—her social work, practical problems connected with institutional and convalescent treatment, procuring instruments and surgical appliances for patients, arranging for special diets and extra nourishment and rest, and for the care of chronic and incurable cases, and of those who are cripples or mentally subnormal. Social work in municipal hospitals, the prevention of hospital abuse, the assessment and collection of patients' donations, coöperation with other workers and other funds, and follow-up work are also discussed. More specialised almoners' work, such as work in venereal disease, maternity, and ophthalmic departments are indicated. An interesting chapter is that describing a typical day in an almoner's life. In a future edition it may be hoped that the conditions of entry to this comparatively new profession and some account of the course of training provided will be included.

THE MECHANISM OF HYPNOTISM

Two little brochures [1] recently published deal with hypnotic suggestion on somewhat the same lines. Dr. Cannon concentrates on the stages of induction and the physiological state that supervenes. He describes very fully the various methods used; but is frankly most interested in the neurology of the condition. Mr. Metcalf is more psychological, and even gives Freud's interpretation of the state of hypnosis—i.e., its relationship to transference and the libidinal rapport between subject and physician. He discusses the relation of hypnosis and suggestion to Christian science and religious healing in general, and writes discursively on spiritism. Clinicians might profitably read this book, since the influence of suggestion and the unconscious application of psychotherapy are far more potent factors in their daily work than most of them realise even to-day.

ZEBE-À-PIQUE

VEGETABLE extracts have some vogue in West Indian islands as malaricides. One of these is zebe-à-pique, which is the local name for the bastard cedar bush (*Parphenium hysterophorum*) commonly distributed over the island of Grenada. A favourite method of preparing the extract from the leaves is to place three or four in a bottle of vermouth, brandy, or whisky until the infusion is very bitter. Incidental to a malaria survey of the island under the auspices of the international health division of the Rockefeller Foundation, an examination of the efficacy of this reported remedy was made by Dr. J. Andrews,[1] assisted by the staff of the colony hospital at St. George's. Varying doses from one tablespoonful to a wineglassful were given with meals three times a day. In all, 12 individuals suffering from the clinical manifestations of malaria, in whose blood subtertian malaria parasites were demonstrable, were placed under observation. Of these, one half (six) received normal quinine therapy whilst the remainder received the nostrum. No proof could be obtained of any specific action. Dr. Andrews concludes that if zebe-à-pique does have any malaricidal properties they are not comparable with those of quinine.

ABSORPTION OF OXYGEN FROM THE SUBCUTANEOUS TISSUES

OXYGEN is sometimes administered subcutaneously for therapeutic purposes, and an attempt has lately been made by Indeyit Singh,[2] of Rangoon, to find how fast it is absorbed from the tissues. Decapitated cats were used in the experiments, and preliminary observations on oxygen intake were made to see whether metabolism was constant or whether it was declining regularly—in which case corrections had to be made. The concentration of oxygen in the inspired air was maintained at a constant level, and after the preliminary estimations oxygen was injected subcutaneously at one, two, three, or four places; it spread, as a rule, over more than half the total subcutaneous area if four punctures were made. The rate of consumption of oxygen was observed at half-hourly intervals, and the investigator found that absorption from the subcutaneous tissues was very slow; it varied from 0·6 to 1·2 c.cm. per minute when 500 c.cm. were injected. An hour, or an hour and a half, after injection absorption almost ceases, owing to the lowering of oxygen tension by the diffusion of carbon dioxide and nitrogen from the tissues.

It is concluded from these experiments that the efficiency of the lungs in saturating the blood with oxygen is 15 to 20 times greater than that of the whole subcutaneous region.

LONDON MEDICAL EXHIBITION.—The Wilson Rubber Company, Ltd. (Slough, Bucks), ask us to point out that no foreign labour is now employed in their factory.

LONDON MEDICAL SOCIETIES

LAST week we gave a list of officers of London medical societies during the present session. The following particulars may be added to those already published:—

Hampstead Medical Society. — President: Dr. Herbert Dixon; Hon. Secretaries: Dr. G. B. McCaul and Dr. David Gillespie. Address: 248, Finchley-road, N.W.3.

London Jewish Hospital Medical Society.—President: Mr. Harold Kisch, F.R.C.S.; Hon. Clinical Secretary: Dr. David Krestin. Hon. General Secretary: Dr. L. Phillips. Address: London Jewish Hospital, Stepney Green, E.1.

North London Medical and Chirurgical Society.—President: Dr. P. O. Ellison; Hon. Secretaries: Dr. W. E. Snell and Dr. Kathleen Matthews. Address: Royal Northern Hospital, Holloway-road, N.7.

Priory Medical Society.—Hon. Secretary: Dr. John Reid. Address: Thornton House, The Avenue, N.W.6.

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[1] Hypnotism, Suggestion, and Faith-healing. By Alexander Cannon, M.D. London: William Heinemann, Ltd. 1932. Pp. 43. 2*s*. 6*d*. Hypnotism and Mental Healing. By Thomas Metcalf. London: Epworth Press, J. Alfred Sharp, 1932. Pp. 96. 2*s*. 6*d*.

[1] Reprint from the Amer. Jour. of Hyg., 1930, xi., 411.

[2] Quart. Jour. Exp. Physiol., 1932, xxii. ,193.